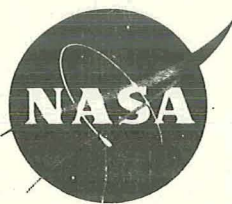


N.



JOHN F. KENNEDY  
SPACE CENTER

GP-592  
REVISION 32  
OCTOBER 4 1974

*Is the earlier  
version in?  
If not, then  
get DRA*

LAUNCH VEHICLE  
CATALOG OF TESTS AND OPERATIONS



Prepared For  
**LAUNCH VEHICLE OPERATIONS**

Prepared By  
**THE BOEING COMPANY  
ATLANTIC TEST CENTER  
SATURN - LAUNCH OPERATIONS**

DATE:  
REVISION

OCTOBER 4, 1974  
32

LAUNCH OPERATIONS

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CHANGE LOG

CHANGES TO THE ORIGINAL DOCUMENT ARE LISTED BELOW:

REVISION

ISSUE DATE

19 COMPLETE REVISION

01/05/72

20 PARTIAL REVISION

03/02/72

21 " "

05/23/72

22 " "

07/24/72

23 " "

10/16/72

24 " "

01/01/73

25 " "

02/09/73

26 " "

03/16/73

27 " "

06/01/73

28 " "

08/03/73

29 " "

09/06/73

30 " "

12/10/73

31 " "

06/03/74

32 " "

10/04/74



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CHANGE SUMMARY — REV 32

TEST CATALOG SHEET	CONTRACTOR	CHANGE				NOTES
		NEW	REVISED	CANCELLED	DELETED	
V-20083	TBC	X				
V-20084			X			
V-20085		X				
V-20086		X				
V-20100			X			
V-20101			X			
V-20102			X			
V-20103			X			
V-20104			X			
V-20105			X			
V-20106			X			
V-20107			X			
V-20108			X			
V-20109			X			
V-20110			X			
V-20111			X			
V-20112			X			
V-20113		X				
V-20114			X			
V-20115			X			
V-20116			X			
V-20117			X			
V-20118	TBC		X			

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CHANGE SUMMARY - REV 32

TEST CATALOG SHEET	CONTRACTOR	CHANGE				NOTES
		NEW	REVISED	CANCELLED	DELETED	
V-20119	TBC		X			
V-20120			X			
V-20126			X			
V-20127			X			
V-20128			X			
V-20129			X			
V-20130			X			
V-20131			X			
V-20132			X			
V-20133	TBC		X			
V-21223	IBM		X			
V-21255			X			
V-21478			X			
V-21479			X			
V-21497	IBM		X			
V-21536	MDC		X			
V-21537	MDC		X			
V-21564	IBM		X			
V-21574	IBM		X			
V-21583	CCSD	X				
V-21584	CCSD	X				
V-23030	IBM		X			
V-23155	IBM		X			

## CATALOG OF TESTS AND OPERATIONS

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TEST CATALOG SHEET	CONTRACTOR	CHANGE				NOTES
		NEW	REVISED	CANCELLED	DELETED	
V-23198	IBM		X			
V-23221			X			
V-23222			X			
V-23223			X			
V-23225			X			
V-23226	IBM		X			
V-23260	CCSD		X			
V-23261			X			
V-23262			X			
V-23263			X			
V-23264			X			
V-23266			X			
V-23267			X			
V-23268			X			
V-23269			X			
V-23275			X			
V-23276	CCSD		X			
V-23279	IBM		X			
V-23280			X			
V-23281			X			
V-23282			X			
V-24223			X			
V-24228	IBM		X			

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		NEW	REVISED	CANCELLED	DELETED	
	IBM					
V-24298			X			
V-24299			X			
V-24391			X			
V-24407			X			
V-24408			X			
V-24422			X			
V-24435			X			
V-24437			X			
V-24443			X			
V-24445	IBM		X			
V-24497	CCSD		X			
V-24499	CCSD		X			
V-24522	CCSD		X			
V-24527	CCSD		X			
V-24537	MDC		X			
V-24561	IBM	X				
V-24579	CCSD	X				
V-26491	IBM		X			
V-26492	IBM		X			
V-26497	IBM		X			
V-26533	CCSD			X		
V-26547	IBM		X			

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TEST CATALOG SHEET	CONTRACTOR	CHANGE				NOTES
		NEW	REVISED	CANCELLED	DELETED	
V-26548	IBM		X			
V-26549	IBM		X			
V-26683	IBM		X			
V-27250	MDC		X			
V-28003	NASA			X		
V-28004				X		
V-28005			X			
V-28008				X		
V-28009	NASA			X		
V-28054	IBM		X			
V-28055	IBM		X			
V-28056	IBM		X			
V-28070	NASA		X			
V-28150	NASA			X		
V-28184	NASA			X		
V-28203	CCSD		X			
V-28205	CCSD		X			
V-28218	CCSD		X			
V-28223	CCSD		X			
V-28232	IBM		X			
V-28233	IBM		X			
V-30050	TBC			X		
V-30053	TBC				X	CANCELLED IN REV 31

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**GP-592**

**CHANGE SUMMARY — REV 32**

TEST CATALOG SHEET	CONTRACTOR	CHANGE				NOTES
		NEW	REVISED	CANCELLED	DELETED	
V-30054	TBC				X	CANCELLED IN REV 31
V-30056					X	
V-30068					X	
V-30080					X	
V-30086					X	
V-30089					X	
V-30099					X	
V-30104					X	
V-30113					X	CANCELLED IN REV 31
V-30115				X		
V-30116					X	CANCELLED IN REV 31
V-30125					X	CANCELLED IN REV 31
V-30128					X	CANCELLED IN REV 31
V-30148				X		
V-30149				X		
V-30166				X		
V-30169					X	CANCELLED IN REV 31
V-30187					X	
V-30199					X	
V-30204					X	
V-30222					X	
V-30226					X	
V-30260	TBC				X	CANCELLED IN REV 31



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TEST CATALOG SHEET	CONTRACTOR	CHANGE				NOTES
		NEW	REVISED	CANCELLED	DELETED	
V-30274	TBC			X		
V-30313					X	CANCELLED IN REV 31
V-30337					X	CANCELLED IN REV 31
V-30340					X	CANCELLED IN REV 31
V-30361				X		
V-30366					X	CANCELLED IN REV 31
V-30376					X	
V-30384					X	
V-30389					X	
V-30391					X	
V-30405					X	
V-30413					X	CANCELLED IN REV 31
V-30419				X		
V-30437					X	CANCELLED IN REV 31
V-30445					X	CANCELLED IN REV 31
V-30452				X		
V-30456					X	CANCELLED IN REV 31
V-30465					X	
V-30488					X	
V-30500					X	
V-30511					X	
V-30523					X	
V-30537	TBC				X	CANCELLED IN REV 31

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CHANGE SUMMARY - REV 32

[illegible]

LIST OF DELETED PAGES				DATE 10/4/74		DOCUMENT GP-592		REVISION 32	PAGE A
TEST NO.	REV.	TEST NO.	REV.	TEST NO.	REV.	TEST NO.	REV.	TEST NO.	REV.
V-20084	-	V-24498	A	V-30383	A				
V-20100	A	V-24522	E	V-30387	-				
V-20101	C	V-24526	-	V-30391	A				
V-20102	A	V-24536	D	V-30404	A				
V-20103	G	V-24561	A	V-30412	-				
V-20105	A			V-30416	-				
V-20106	E	V-26491	C	V-30437	A				
V-20108	C	V-26497	D	V-30445	A				
V-20109	A	V-26532	C	V-30452	A				
V-20111	B	V-26546	-	V-30455	-				
V-20114	A	V-26548	B	V-30465	A				
V-20117	G	V-26682	A	V-30488	A				
V-20119	B	V-27250	A	V-30500	A				
V-20126	A	V-28003	B	V-30510	-				
V-20127	C	V-28005	B	V-30523	A				
V-20129	A	V-28009	A	V-30537	A				
V-20130	G	V-28054	C	V-31011	D				
V-20131	-	V-28056	F	V-31108	C				
V-20132	D	V-28069	B	V-33037	A				
V-21223	H	V-28150	B	V-33039	-				
V-21255	E	V-28182	-	V-34017	D				
V-21478	C	V-28202	A	V-34045	C				
V-21496	-	V-28204	A	V-34047	H				
V-21535	-	V-28217	-	V-34052	B				
V-21537	-	V-28223	A	V-36038	F				
V-21564	A	V-28231	-	V-36046	B				
V-21572	-	V-28233	-	V-36111	-				
V-21582	-	V-30049	-	V-38010	-				
V-23029	K	V-30053	A						
V-23155	E	V-30055	-						
V-23197	A	V-30066	-						
V-23220	A	V-30079	A						
V-23222	-	V-30086	A						
V-23224	-	V-30089	A						
V-23226	-	V-30098	-						
V-23259	B	V-30103	-						
V-23261	A	V-30112	-						
V-23263	-	V-30115	-						
V-23265	A	V-30124	A						
V-23267	-	V-30128	A						
V-23269	-	V-30147	-						
V-23275	-	V-30149	-						
V-23279	A	V-30166	A						
V-23281	A	V-30187	A						
V-23282	B	V-30199	A						
V-24223	E	V-30201	A						
V-24228	J	V-30220	-						
V-24298	E	V-30225	-						
V-24391	D	V-30258	A						
V-24407	D	V-30270	A						
V-24422	A	V-30313	A						
V-24434	-	V-30337	A						
V-24436	A	V-30340	A						
V-24442	A	V-30361	A						
V-24444	A	V-30366	A						
V-24497	B	V-30375	A						

NOTE: REVISION INSTRUCTIONS  
 APPEARING ON PAGE 111  
 OF THIS DOCUMENT SHOULD  
 BE CLEARLY FOLLOWED.

LIST OF ADDED PAGES			DATE 10/4/74		DOCUMENT GP-592		REVISION 32	PAGE B	
TEST NO.	REV.	TEST NO.	REV.	TEST NO.	REV.	TEST NO.	REV.	TEST NO.	REV.
V-20083	A	V-24434	-	V-30375	A				
V-20085	A	V-24436	A	V-30383	A				
V-20100	B	V-24442	A	V-30387	-				
V-20101	D	V-24444	A	V-30393	A				
V-20102	B	V-24497	D	V-30404	A				
V-20103	H	V-24498	A	V-30412	-				
V-20105	C	V-24522	F	V-30416	-				
V-20106	F	V-24526	-	V-30438	A				
V-20108	E	V-24536	D	V-30446	-				
V-20109	B	V-24561	B	V-30452	B				
V-20111	C	V-24579	-	V-30455	-				
V-20113	-	V-26491	D	V-30490	-				
V-20114	C	V-26497	E	V-30510	-				
V-20116	E	V-26532	C	V-31011	E				
V-20117	H	V-26546	-	V-31108	D				
V-20119	C	V-26548	C	V-31133	A				
V-20126	B	V-26682	A	V-33037	A				
V-20127	D	V-27250	B	V-33039	A				
V-20129	B	V-28003	C	V-34017	E				
V-20130	H	V-28005	C	V-34045	C				
V-20131	C	V-28009	B	V-34047	I				
V-20132	E	V-28054	D	V-34052	B				
V-21223	I	V-28056	G	V-36038	G				
V-21255	F	V-28069	C	V-36046	C				
V-21478	D	V-28150	C	V-36111	-				
V-21496	-	V-28182	-	V-38010	A				
V-21535	-	V-28202	A						
V-21537	A	V-28204	A						
V-21564	B	V-28217	-						
V-21572	-	V-28223	B						
V-21582	-	V-28231	-						
V-21584	-	V-28233	A						
V-23029	K	V-30049	-						
V-23155	F	V-30055	-						
V-23197	A	V-30066	-						
V-23220	A	V-30079	-						
V-23222	A	V-30088	A						
V-23224	-	V-30090	B						
V-23226	A	V-30098	-						
V-23259	B	V-30103	-						
V-23261	B	V-30112	-						
V-23263	A	V-30115	A						
V-23265	A	V-30124	A						
V-23267	A	V-30129	-						
V-23269	A	V-30147	-						
V-23275	A	V-30149	A						
V-23279	B	V-30166	B						
V-23281	B	V-30201	A						
V-23282	C	V-30220	-						
V-24223	F	V-30225	-						
V-24228	K	V-30258	A						
V-24298	F	V-30270	A						
V-24391	E	V-30314	A						
V-24407	E	V-30361	B						
V-24422	B	V-30369	-						

NOTE: REVISION INSTRUCTIONS  
APPEARING ON PAGE iii  
OF THIS DOCUMENT SHOULD  
BE CLEARLY FOLLOWED.

APOLLO/SATURN V INDEX OF LAUNCH VEHICLE  
TEST AND OPERATIONS CATALOG SHEETS

TEST NUMBER	REVISION LEVEL	INDEX CHANGE EFFECTIVE	
V-20004	E	8/9/71	H
V-20010	J	8/3/73	H
V-20017	P	8/3/73	H
V-20022	M	8/3/73	H
V-20025	D	7/24/72	-
V-20026	I	7/24/72	-
V-20032	G	8/3/73	H
V-20037	H	8/3/73	H
V-20038	C	8/3/73	H
V-20048	N	8/3/73	-
V-20049	J	8/3/73	H
V-20052	A	4/15/69	-
V-20056	B	3/25/71	H
V-20060	X	8/3/73	H
V-20062	C	1/1/73	-
V-20064	C	2/9/73	H
V-20066	F	5/23/72	-
V-20067	G	1/1/73	H
V-20070	H	8/3/73	-
V-20072		7/21/69	-
V-20074		8/12/69	H
V-20076	B	3/2/72	-
V-20077		9/17/70	H
V-20078	-	8/3/73	H
V-20079	A	8/3/73	H
V-20080	B	1/5/72	H
V-20081	B	8/3/73	H
V-20083	A	10/4/74	H
V-20084	A	10/4/74	-
V-20085	A	10/4/74	H
V-20086	A	10/4/74	H
V-20100	B	10/4/74	-
V-20101	D	10/4/74	-
V-20102	B	10/4/74	H
V-20103	H	10/4/74	H
V-20104	C	10/4/74	-
V-20105	C	10/4/74	-
V-20106	F	10/4/74	H
V-20107	E	10/4/74	H
V-20108	E	10/4/74	H
V-20109	B	10/4/74	H
V-20110	B	10/4/74	H
V-20111	C	10/4/74	H
V-20112	E	10/4/74	H
V-20113	A	10/4/74	H
V-20114	C	10/4/74	-

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V-20115	C	10/4/74	H
V-20116	E	10/4/74	H
V-20117	H	10/4/74	H
V-20118	A	10/4/74	H
V-20119	C	10/4/74	H
V-20120	E	10/4/74	H
V-20121	B	6/1/73	H
V-20122	B	8/8/73	H
V-20126	B	10/4/74	H
V-20127	D	10/4/74	H
V-20128	D	10/4/74	H
V-20129	B	10/4/74	H
V-20130	H	10/4/74	H
V-20131	C	10/4/74	H
V-20132	E	10/4/74	H
V-20133	A	10/4/74	H
V-20141		5/23/72	H
V-20142		5/23/72	H
V-20143		5/23/72	H
V-20144	A	7/24/72	H
V-20145		5/23/72	H
V-20146	A	10/5/72	H
V-20147		5/23/72	H
V-20148		5/23/72	H
V-20149	A	10/5/72	H
V-20150		5/23/72	H
V-20151	B	10/5/72	H
V-20152	A	6/1/73	H
V-20153	B	10/5/72	H
V-20154		5/23/72	H
V-20155		5/23/72	H
V-20156		5/23/72	H
V-20157		5/23/72	H
V-20158		5/23/72	H
V-21002	C	2/9/70	H
V-21005	H	1/8/72	H
V-21006	F	9/17/70	H
V-21007	G	7/24/72	H
V-21008	A		H
V-21009	B		H
V-21010	D	1/5/72	H
V-21012	B		H
V-21013	C	9/17/70	H
V-21014	A	1/5/72	H
V-21015	D	1/5/72	H
V-21018	D	4/10/70	H
V-21019	A	8/9/71	H
V-21020			H
V-21022	F	1/1/73	H
V-21023	C	11/5/70	H
V-21028	C	6/17/70	H
V-21032	A		H
V-21034	C	8/9/71	H



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V-21035	B	11/5/70	
V-21036	A	5/27/69	
V-21037	A		
V-21038	C	2/9/70	
V-21068	F	6/17/70	
V-21067	B	5/23/72	
V-21072	E	8/9/71	
V-21075	E	6/1/73	
V-21083	A	8/12/69	
V-21084	J	3/2/72	
V-21096	G	2/9/73	
V-21097	C	4/10/70	
V-21100	D	5/23/72	
V-21101	H	1/1/73	H
V-21103	E	11/5/70	
V-21105	B	3/2/72	
V-21107	C	7/24/72	
V-21109	C	2/9/70	
V-21110	C	1/30/69	
V-21111	D	1/1/73	
V-21124	A	1/8/72	
V-21152	D	1/5/72	
V-21153	A	1/5/72	
V-21158	C	1/5/72	
V-21159	C	1/5/72	
V-21161	C	3/25/71	
V-21162	C	1/5/72	
V-21163	C	1/5/72	
V-21164	C	1/5/72	
V-21165	C	1/5/72	
V-21166	C	1/5/72	
V-21174			
V-21176	C	1/5/72	
V-21191	C	6/17/70	
V-21194	B	6/20/69	
V-21196			
V-21203	B	2/9/70	
V-21204	L	8/9/71	H
V-21208	B	2/9/70	
V-21210			
V-21214	H	5/23/72	
V-21222	D	5/23/72	
V-21223	I	10/4/74	
V-21225	A	3/25/71	
V-21227	C	5/23/72	
V-21230	A		
V-21241	B	8/9/71	
V-21243	E	3/2/72	
V-21245	B	2/9/73	
V-21247			
V-21249	C	2/9/70	
V-21255	F	10/4/74	
V-21259	E	1/5/72	

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V-21260	F	6/1/73	-
V-21261	E	7/24/72	-
V-21262	E	5/23/72	-
V-21263	E	5/23/72	-
V-21264	F	8/9/71	-
V-21266	B	5/23/72	-
V-21267	C	12/10/73	-
V-21272			-
V-21273	A	1/5/72	-
V-21274	F	6/1/73	-
V-21285	D	12/10/73	-
V-21290	A	3/25/71	-
V-21292	B	1/5/72	-
V-21293			-
V-21294			-
V-21295	A	8/9/71	-
V-21296	C	4/10/70	-
V-21297	B		-
V-21301	F	6/1/73	-
V-21311	A		-
V-21315	C	5/23/72	H
V-21320			H
V-21321	A	1/5/72	H
V-21322	G	3/2/72	H
V-21323	I	6/1/73	H
V-21324	I	6/1/73	H
V-21326	A	11/26/69	-
V-21327	C	1/5/72	-
V-21332	C	3/2/72	H
V-21333			-
V-21334			-
V-21337	A	1/5/72	-
V-21343	G	5/23/72	-
V-21345			-
V-21348	E	3/25/71	-
V-21349	B		-
V-21363	C	1/5/72	-
V-21371	H	6/1/73	-
V-21376	D	3/25/71	-
V-21379	A		-
V-21380	D	6/1/73	-
V-21386	B	10/5/72	H
V-21391			-
V-21392			-
V-21393			-
V-21394			-
V-21395			-
V-21398	E	3/25/71	-
V-21400	A	5/23/72	-
V-21406	B	6/17/70	-
V-21409	A	11/5/70	-
V-21411	C	5/23/72	-
V-21412	C	5/23/72	-

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V-21416			
V-21418			
V-21419	D	5/23/72	
V-21420		1/30/69	
V-21425	A	5/27/69	
V-21426	B	4/10/70	
V-21429	A	8/9/71	
V-21430		4/15/69	
V-21432	D	2/9/70	
V-21434	B	10/5/72	
V-21435	B	5/23/72	
V-21437	A	2/9/70	H
V-21438	B	1/1/73	
V-21439		8/22/69	
V-21440		8/22/69	
V-21441	A	11/5/70	
V-21443	A	3/25/71	
V-21444	A	3/25/71	
V-21445	A	6/17/70	
V-21446	D	5/23/72	
V-21447		2/9/70	
V-21448	C	5/23/72	
V-21449	A	9/17/70	
V-21450	B	3/25/71	
V-21452	B	7/24/72	
V-21453	A	8/9/71	
V-21454	A	1/8/72	H
V-21455		9/17/70	
V-21456		9/17/70	
V-21457		9/17/70	
V-21458	D	3/16/73	H
V-21459	B	1/8/72	
V-21460	C	5/23/72	
V-21462		11/5/70	
V-21464	A	5/23/72	
V-21465		1/21/71	
V-21466	A	8/9/71	
V-21467		3/25/71	
V-21468		3/25/71	
V-21469		3/25/71	
V-21470	A	3/16/73	
V-21471		3/25/71	
V-21472		3/25/71	
V-21473		3/25/71	
V-21474	A	5/23/72	
V-21478	D	10/4/74	
V-21479	D	10/4/74	H
V-21480	A	6/1/73	
V-21481	A	12/10/73	
V-21482		8/9/71	
V-21483		8/9/71	
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V-21486		8/9/71	
V-21487		8/9/71	
V-21488		1/8/72	
V-21489	A	3/2/72	
V-21490	D	6/1/73	
V-21491		1/5/72	
V-21492		1/5/72	
V-21493	A	3/2/72	
V-21494		1/5/72	
V-21495		1/5/72	
V-21496		1/5/72	
V-21497	B	10/4/74	H
V-21498	A	3/2/72	
V-21500	B	7/24/72	H
V-21501	A	6/1/73	
V-21502	A	7/24/72	
V-21503	A	7/24/72	
V-21504	B	10/5/72	
V-21505	B	7/24/72	
V-21506	A	7/24/72	
V-21507	B	3/16/73	
V-21508	C	6/1/73	
V-21509	B	7/24/72	
V-21510	A	7/24/72	
V-21511	B	3/16/73	
V-21513	B	5/23/72	
V-21514	D	6/1/73	
V-21515	E	6/1/73	
V-21516		1/5/72	
V-21517	B	10/5/72	
V-21518	A	2/9/73	
V-21519	E	6/1/73	
V-21520	A	6/1/73	
V-21522		1/5/72	
V-21523	A	5/23/72	
V-21524	B	2/9/73	
V-21525	A	7/24/72	
V-21526	A	7/24/72	
V-21527	A	5/23/72	
V-21528		3/2/72	
V-21529	B	6/1/73	H
V-21530	B	6/1/73	H
V-21531		3/2/72	H
V-21532	D	3/16/73	H
V-21533		3/2/72	
V-21534		3/2/72	
V-21535		3/2/72	
V-21536	A	10/4/74	
V-21537	A	10/4/74	
V-21538	A	3/16/73	
V-21539		3/2/72	
V-21540		3/2/72	

V-21541		5/23/72	
V-21542		3/2/72	
V-21543		3/2/72	
V-21544		5/23/72	
V-21545		5/23/72	
V-21546	D	12/10/73	
V-21553	A	6/1/73	H
V-21554		10/5/72	
V-21555	B	2/9/73	
V-21556		10/5/72	
V-21557		10/5/72	
V-21558		10/5/72	
V-21559		10/5/72	
V-21560	A	1/1/73	
V-21561		10/5/72	
V-21562		10/5/72	H
V-21563		10/5/72	
V-21564	B	10/4/74	
V-21565		1/1/73	
V-21566		1/1/73	
V-21568		1/1/73	
V-21569	A	8/8/73	
V-21570		1/1/73	
V-21571		1/1/73	
V-21572		1/1/73	
V-21574	A	10/4/74	
V-21575			
V-21576			
V-21582		6/1/73	
V-21583		10/4/74	H
V-21584		10/4/74	
V-22005	A	3/2/72	
V-22006	D	10/5/72	
V-22013	B	5/23/72	
V-22014	D	5/23/72	
V-22015		5/23/72	
V-23011	B	2/9/70	
V-23012	A		
V-23013	F	10/5/72	
V-23014	I	3/2/72	
V-23015	B		
V-23017	B	2/9/70	
V-23018	C	8/22/69	H
V-23025	C	4/10/70	
V-23026			
V-23027			
V-23028	B	5/23/72	
V-23029	K	1/5/72	
V-23030	I	10/4/74	
V-23048	F	12/10/73	
V-23049	F	8/3/73	
V-23059	E	5/23/72	
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V-23066	G	5/23/72	-
V-23068	G	5/23/72	-
V-23069	D	8/9/71	-
V-23123	E	1/5/72	H
V-23124	9	3/2/72	H
V-23125	E	5/23/72	H
V-23126	A	8/22/69	H
V-23137	B	8/12/69	-
V-23143	-	-	-
V-23144	A	-	-
V-23145	A	1/30/69	-
V-23146	A	-	-
V-23147	A	-	-
V-23148	A	-	-
V-23150	A	-	-
V-23153	J	5/23/72	-
V-23155	F	10/4/74	-
V-23159	A	-	-
V-23160	C	1/5/72	-
V-23169	F	5/23/72	-
V-23171	G	7/21/69	-
V-23173	-	-	-
V-23178	D	5/23/72	-
V-23179	A	-	-
V-23180	B	7/24/72	-
V-23181	B	11/1/69	-
V-23182	B	11/1/69	-
V-23183	C	2/9/70	-
V-23185	E	10/5/72	-
V-23187	B	2/9/70	-
V-23188	C	2/9/70	-
V-23190	E	12/10/73	-
V-23191	-	-	-
V-23192	-	-	-
V-23195	A	8/9/71	-
V-23197	A	5/23/72	-
V-23198	B	10/4/74	-
V-23199	E	10/5/72	-
V-23200	C	8/3/73	-
V-23212	-	3/25/71	-
V-23213	A	12/10/73	H
V-23214	A	12/10/73	-
V-23215	A	5/23/72	-
V-23217	B	8/9/71	-
V-23218	A	6/8/74	-
V-23219	A	6/8/74	-
V-23220	A	6/8/74	-
V-23221	A	10/4/74	-
V-23222	A	10/4/74	-
V-23223	A	10/4/74	-
V-23224	-	8/9/71	-
V-23225	A	10/4/74	-



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V-23226	A	10/4/74	-
V-23227		8/9/71	-
V-23228		8/9/71	-
V-23229	A	12/10/73	-
V-23230	A	5/23/72	-
V-23232	A	8/9/71	-
V-23234		4/10/70	-
V-23235	B	5/23/72	-
V-23236		8/9/71	-
V-23237	B	6/3/74	-
V-23238	A	1/5/72	-
V-23239		8/9/71	-
V-23240		8/9/71	-
V-23241		8/9/71	-
V-23242		8/9/71	-
V-23243		8/9/71	-
V-23244	A	12/10/73	-
V-23245		8/9/71	-
V-23246		8/9/71	-
V-23247	B	12/10/73	-
V-23248	B	12/10/73	-
V-23249	A	12/10/73	-
V-23250	A	12/10/73	-
V-23251	A	12/10/73	-
V-23252		8/9/71	-
V-23253		8/9/71	-
V-23254	B	12/10/73	-
V-23255		8/9/71	-
V-23256	A	12/10/73	-
V-23257		8/9/71	-
V-23258	A	3/2/72	-
V-23259	B	3/26/73	-
V-23260	A	10/4/74	-
V-23261	B	10/4/74	-
V-23262	A	10/4/74	-
V-23263	A	10/4/74	-
V-23264	A	1/5/72	-
V-23265	A	7/24/72	-
V-23266	B	10/4/74	-
V-23267	A	10/4/74	-
V-23268	A	10/4/74	-
V-23269	A	10/4/74	-
V-23270	C	6/1/73	-
V-23271		1/5/72	-
V-23272		1/5/72	-
V-23273		1/5/72	-
V-23274		1/5/72	-
V-23275	A	10/4/74	-
V-23276	D	10/4/74	-
V-23277		1/5/72	-
V-23278		5/83/72	-
V-23279	B	10/4/74	-
V-23280	A	10/4/74	-

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V-23281	B	10/4/74	I
V-23282	C	10/4/74	I
V-23283		5/23/72	I
V-23284		5/23/72	I
V-23285		5/23/72	I
V-23286		5/23/72	I
V-23287		5/23/72	I
V-23288	B	3/16/73	I
V-23289	A	8/8/73	I
V-23290		10/5/72	I
V-24000			I
V-24001	B		I
V-24002	A		I
V-24003	A		I
V-24004	A		I
V-24005	A		I
V-24006	B		I
V-24009	C	5/27/69	I
V-24010	B		I
V-24011	B		I
V-24012	A		I
V-24014	A		I
V-24016			I
V-24017	A		I
V-24018	E	1/8/72	I
V-24019	H	3/2/72	I
V-24020	D	9/17/70	I
V-24022	C	3/25/71	I
V-24024	E	3/25/71	I
V-24025	A		I
V-24026	F	9/17/70	I
V-24028	B	3/25/71	I
V-24029	B	3/25/71	I
V-24030	B	3/25/71	I
V-24032	B	3/25/71	I
V-24034	C	3/25/71	I
V-24035	B	1/5/72	I
V-24036	A		I
V-24038	C	3/25/71	I
V-24039	C	3/25/71	I
V-24040	F	1/8/72	I
V-24044	D	10/5/72	I
V-24045	D	3/25/71	I
V-24048	D	3/25/71	I
V-24049	E	1/5/72	I
V-24065	C	8/9/71	I
V-24073	B	8/9/71	I
V-24076	C	8/9/71	I
V-24078	C	8/9/71	I
V-24080	C	8/9/71	I
V-24081	C	8/9/71	I
V-24083	B	8/9/71	I
V-24084	C	11/5/70	I

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V-24086	D	5/23/72	H
V-24088	C	5/23/72	H
V-24091	D	1/5/72	H
V-24092	G	3/16/73	H
V-24095	D	1/5/72	H
V-24098	G	12/10/73	H
V-24100	C	5/23/72	H
V-24101	D	8/9/71	H
V-24106	H	1/5/72	H
V-24107	G	1/5/72	H
V-24109	D	5/23/72	H
V-24110	G	3/25/71	H
V-24111	C	3/25/71	H
V-24113	D	8/12/69	H
V-24115	D	8/9/71	H
V-24116	G	9/17/70	H
V-24120	D	8/9/71	H
V-24124	G	3/2/72	H
V-24125	J	7/24/72	H
V-24126	G	5/23/72	H
V-24153	A		H
V-24154			H
V-24160	F	2/9/70	H
V-24167	A	1/5/72	H
V-24168	A	3/10/69	H
V-24177	B	8/9/71	H
V-24180	B	3/25/71	H
V-24181	A		H
V-24182	B	8/9/71	H
V-24183	C	8/9/71	H
V-24184	C	8/9/71	H
V-24185	C	2/9/73	H
V-24186	H	1/5/72	H
V-24189	G	1/5/72	H
V-24190	B	8/9/71	H
V-24192	D	3/25/71	H
V-24193	B	3/16/73	H
V-24201	C	3/16/73	H
V-24202	C	3/16/73	H
V-24203	B	3/25/71	H
V-24204	B	3/25/71	H
V-24223	F	10/4/74	H
V-24225			H
V-24228	K	10/4/74	H
V-24235	D	3/25/71	H
V-24236	C	3/25/71	H
V-24237	E	7/24/72	H
V-24238	E	7/24/72	H
V-24240	A	3/25/71	H
V-24243	F	10/5/72	H
V-24244	H	6/17/70	H
V-24245	H	3/25/71	H
V-24246	H	8/1/73	H

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V-24248	G	3/25/71	H
V-24250	H	3/25/71	H
V-24253	B	6/17/70	H
V-24254	B	6/17/70	H
V-24257	F	3/2/72	H
V-24258	C	2/9/70	H
V-24260	A		H
V-24261	G	3/25/71	H
V-24263	F	7/24/72	H
V-24266	C	2/9/70	H
V-24267	D	3/25/71	H
V-24269	A	8/9/71	H
V-24270	H	2/9/73	H
V-24271	A	3/25/71	H
V-24273	B	3/25/71	H
V-24275	B	9/17/70	H
V-24276	F	1/1/73	H
V-24295	D	8/9/71	H
V-24298	F	10/4/74	H
V-24299	G	10/4/74	H
V-24300	E	1/5/72	H
V-24303	F	10/5/72	H
V-24304			H
V-24305	D	3/16/73	H
V-24307	B		H
V-24308	C	5/27/69	H
V-24309	E	3/25/71	H
V-24310	D	3/25/71	H
V-24311	F	3/25/71	H
V-24312	E	3/25/71	H
V-24314	B	3/25/71	H
V-24316	C	5/27/69	H
V-24317	C	1/5/72	H
V-24318	D	3/25/71	H
V-24319	C	8/12/69	H
V-24320	B	8/12/69	H
V-24321	D	3/25/71	H
V-24322	A	11/1/69	H
V-24324	E	5/23/72	H
V-24326	G	5/23/72	H
V-24327	E	3/16/73	H
V-24329	A	8/9/71	H
V-24331	C	3/25/71	H
V-24332	B	3/25/71	H
V-24334	C	8/9/71	H
V-24335	B	8/9/71	H
V-24336	A	6/9/71	H
V-24337	C	2/9/73	H
V-24338	C	5/23/72	H
V-24340	H	1/5/72	H
V-24341	C	1/1/73	H
V-24342	C	3/25/71	H

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V-24343	B	8/9/71	H
V-24344	K	3/26/73	
V-24345	B	8/9/71	H
V-24347			
V-24348	G	1/1/73	H
V-24352	C	3/25/71	H
V-24356	B	8/9/71	H
V-24357	F	3/2/72	H
V-24359			H
V-24361	I	3/2/72	H
V-24362	A	8/22/69	H
V-24363	D	1/5/72	H
V-24364	A	3/2/72	H
V-24367	A	3/2/72	H
V-24368	B	8/9/71	H
V-24369	C	5/23/72	H
V-24370	D	5/23/72	H
V-24372	A		H
V-24373	D	5/23/72	H
V-24374	C	5/23/72	H
V-24375	A	6/1/73	H
V-24376	A	3/25/71	H
V-24377	B	6/1/73	H
V-24378	B	8/9/71	H
V-24379		1/30/69	H
V-24380	A	8/12/69	H
V-24381	A	8/9/71	H
V-24382	B	8/9/71	H
V-24383	A	5/23/72	H
V-24386	D	3/25/71	H
V-24387	B	1/5/72	H
V-24388	B	8/9/71	H
V-24389	C	3/2/72	H
V-24390	B	8/9/71	H
V-24391	E	10/4/74	H
V-24392	C	8/9/71	H
V-24396	C	8/9/71	H
V-24397	A	8/9/71	H
V-24398	C	8/9/71	H
V-24401	A	3/25/71	H
V-24402	E	5/23/72	H
V-24403	A	5/23/72	H
V-24404	B	7/24/72	H
V-24405		4/10/70	H
V-24406		4/10/70	H
V-24407	E	10/4/74	H
V-24408	D	10/4/74	H
V-24409		6/17/70	H
V-24410	D	7/24/72	H
V-24411	A	3/25/71	H
V-24412	A	9/17/70	H
V-24415	A	9/17/70	H
V-24416		9/17/70	H

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V-24418	A	1/5/72	H
V-24419	A	3/2/72	H
V-24420	D	6/1/73	H
V-24421	C	5/23/72	H
V-24422	B	10/4/74	H
V-24424	A	3/25/71	H
V-24425	B	8/8/73	H
V-24426	A	6/1/73	H
V-24427	B	6/1/73	H
V-24428	F	5/23/72	H
V-24429	B	7/24/72	H
V-24430		3/25/71	H
V-24431		3/25/71	H
V-24432		8/9/71	H
V-24433		8/9/71	H
V-24434		8/9/71	H
V-24435	B	10/4/74	H
V-24436	A	7/24/72	H
V-24437	C	10/4/74	H
V-24438		8/9/71	H
V-24439		8/9/71	H
V-24440	A	5/23/72	H
V-24441	A	5/23/72	H
V-24442	A	7/24/72	H
V-24443	B	10/4/74	H
V-24444	A	7/24/72	H
V-24445	B	10/4/74	H
V-24446	A	1/5/72	H
V-24447		8/9/71	H
V-24448		8/9/71	H
V-24449	A	7/24/72	H
V-24452	C	6/3/74	H
V-24453	A	5/23/72	H
V-24454	B	5/23/72	H
V-24455	B	6/3/74	H
V-24456	D	6/3/74	H
V-24457	A	5/23/72	H
V-24458		1/5/72	H
V-24459		1/5/72	H
V-24460		1/5/72	H
V-24461		1/5/72	H
V-24462	F	12/10/73	H
V-24464		1/5/72	H
V-24465		1/5/72	H
V-24466	A	5/23/72	H
V-24467	B	6/1/73	H
V-24468	E	6/1/73	H
V-24469	E	6/1/73	H
V-24470	B	2/9/73	H
V-24471	B	2/9/73	H
V-24472	A	3/16/73	H
V-24473	B	6/1/73	H



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V-24474		1/5/72	
V-24475	A	12/10/73	H
V-24476		1/5/72	
V-24477		1/5/72	
V-24478	A	5/23/72	
V-24479	A	5/23/72	
V-24480	A	5/23/72	
V-24481	A	5/23/72	
V-24482	A	5/23/72	
V-24483	A	5/23/72	
V-24484	A	5/23/72	
V-24485	B	5/23/72	
V-24486	A	5/23/72	
V-24487	B	6/8/74	H
V-24489		3/2/72	
V-24491		3/2/72	
V-24492	A	7/24/72	H
V-24493	B	6/1/73	H
V-24494	A	7/24/72	H
V-24495		3/2/72	H
V-24497	D	10/4/74	H
V-24498	A	1/1/73	H
V-24499	E	10/4/74	H
V-24500	A	7/24/72	H
V-24501	A	2/9/73	H
V-24502	B	1/1/73	H
V-24503	D	1/1/73	H
V-24504	B	7/24/72	H
V-24505	A	6/1/73	H
V-24506	B	6/1/73	H
V-24507	A	5/23/72	H
V-24508	B	7/24/72	H
V-24509	A	6/1/73	H
V-24510	D	3/16/73	H
V-24511	B	3/16/73	H
V-24512		3/2/72	H
V-24513	B	1/1/73	H
V-24514		3/2/72	H
V-24515	B	6/1/73	H
V-24516	A	5/23/72	H
V-24517	B	2/9/73	H
V-24518		3/2/72	H
V-24519	A	5/23/72	H
V-24520	C	8/3/73	H
V-24521	A	3/16/73	H
V-24522	F	10/4/74	H
V-24523	B	1/1/73	H
V-24525	A	5/23/72	H
V-24526		3/2/72	H
V-24527	D	10/4/74	H
V-24528		3/2/72	H
V-24529		3/2/72	H
V-24530		3/2/72	H

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V-24531	A	7/24/72	H
V-24532	C	6/1/73	H
V-24534	A	5/23/72	H
V-24535		3/2/72	H
V-24536	D	6/1/73	H
V-24537	B	10/4/74	H
V-24538		3/2/72	H
V-24539		3/2/72	H
V-24540	A	6/3/74	H
V-24541	B	7/24/72	H
V-24542		3/2/72	H
V-24543		3/2/72	H
V-24544	A	3/16/73	H
V-24545		3/2/72	H
V-24546	B	6/3/74	H
V-24547		5/23/72	H
V-24548	C	6/1/73	H
V-24549	A	7/24/72	H
V-24550	A	7/24/72	H
V-24551	A	7/24/72	H
V-24552	C	12/10/73	H
V-24553		5/23/72	H
V-24554	A	8/3/73	H
V-24555		5/23/72	H
V-24556		5/23/72	H
V-24559	B	8/5/73	H
V-24560		7/24/72	H
V-24561	B	10/4/74	H
V-24562		7/24/72	H
V-24563	A	12/10/73	H
V-24564	B	12/10/73	H
V-24568	A	8/5/73	H
V-24570		8/3/73	H
V-24571		12/10/73	H
V-24572		12/10/73	H
V-24573		12/10/73	H
V-24574		6/3/74	H
V-24575		6/3/74	H
V-24576		6/3/74	H
V-24577	A	6/3/74	H
V-24578		6/3/74	H
V-24579		10/4/74	H
V-25000	E	9/17/70	H
V-25001	C	5/23/72	H
V-25002	D	6/1/73	H
V-25003	B		H
V-25004	C		H
V-25005	D	1/5/72	H
V-25006	B		H
V-25007	B		H
V-25009	B	11/5/70	H
V-25010	B		H
V-25011	B		H

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V-25012	B		
V-25013	E	5/23/72	H
V-25014			
V-25015	A		
V-25016	B		
V-25017	A		
V-25018	D	5/23/72	
V-25019	B		
V-25020	B		
V-25021	B		
V-25023	B		
V-25025	B		
V-25026			
V-25028	C	3/25/71	
V-25029	C	3/2/72	H
V-25030			
V-25032	C		H
V-25033	C	3/2/72	H
V-25034	B		H
V-25035	B	5/27/69	H
V-25036	C		H
V-25037	B		H
V-25041	B		
V-25042	B		
V-25044	B		
V-25076	A		
V-25077	B		
V-25078	A		
V-25090	A		
V-25091	A		
V-25092	A		
V-25093	A		
V-25094	A		
V-25095	A		
V-25098	A		
V-25101	C	8/3/73	
V-25102	B		
V-25103	B		
V-25104	B		
V-25113	E	3/16/73	
V-25119	D	10/5/72	
V-25120	D	10/5/72	
V-25128	C	10/5/72	
V-25141			
V-25142	B		
V-25143	B		
V-25144	A	3/2/72	H
V-25146	B	5/23/72	H
V-25148	E	3/25/71	
V-25149	C	2/9/70	
V-25151	F	5/23/72	
V-25152			
V-25153	A	5/23/72	H

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V-25154	A	2/9/70	I
V-25155			I
V-25156			I
V-25157			I
V-25159			I
V-25160			I
V-25164			I
V-25167			I
V-25171			I
V-25172			I
V-25173			I
V-25174			I
V-25177			I
V-25178			I
V-25179			I
V-25180			I
V-25184			I
V-25186			I
V-25188			I
V-25242			I
V-25252			I
V-25258			I
V-25260			I
V-25271			I
V-25274			I
V-25276			I
V-25277			I
V-25279			I
V-25281			I
V-25282			I
V-25283			I
V-25284			I
V-25291			I
V-25296			I
V-25301			I
V-25302			I
V-25309			I
V-25311			I
V-25312			I
V-25318			I
V-25319			I
V-25320			I
V-25321			I
V-25322			I
V-25323			I
V-25324			I
V-25325			I
V-25326			I
V-25327			I
V-25328			I
V-25329			I
V-25330			I
V-25331			I

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V-25332	C	6/17/70	H
V-25334	D	7/24/72	H
V-25335	C	1/21/71	H
V-25336	B		H
V-25337	C	9/17/70	H
V-25338	C	1/21/71	H
V-25339	B		H
V-25340	B		H
V-25341	D	7/24/72	H
V-25342	B		H
V-25343	D	10/5/72	H
V-25344	C		H
V-25345	B		H
V-25347	B	3/2/72	H
V-25348	A		H
V-25351	B	5/23/72	H
V-25353	B	10/5/72	H
V-25354			H
V-25355	C	10/5/72	H
V-25357	B	1/30/69	H
V-25358			H
V-25359	B		H
V-25363	A	1/30/69	H
V-25364	B	10/5/72	H
V-25365	C	10/5/72	H
V-25370	A	1/30/69	H
V-25371	B	10/5/72	H
V-25373	C	10/5/72	H
V-25374	A	3/10/69	H
V-25385	F	7/24/72	H
V-25386	C	10/5/72	H
V-25388	A		H
V-25389	G	3/2/72	H
V-25393			H
V-25394	C	2/9/70	H
V-25395	C	2/9/70	H
V-25396	C	7/24/72	H
V-25397	C	4/10/70	H
V-25398	A	7/24/72	H
V-25399	A	6/3/74	H
V-25400	A	8/3/73	H
V-25401	B	1/5/72	H
V-25402			H
V-25405			H
V-25406	F	1/5/72	H
V-25407	B	5/23/72	H
V-25408		8/2/69	H
V-25409	B	10/5/72	H
V-25410	A	1/21/71	H
V-25411		1/5/72	H
V-25412		1/5/72	H
V-25413	A	5/23/72	H
V-25414		1/5/72	H

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V-25415		1/5/72	
V-25416		1/5/72	
V-25417		1/5/72	
V-25418	A	1/1/73	
V-25420		3/2/72	
V-25421		3/2/72	
V-25422	A	10/5/72	H
V-25423	A	10/5/72	H
V-25424		3/2/72	
V-25425		3/2/72	
V-25427	A	10/5/72	
V-25428	A	10/5/72	
V-25429	A	10/5/72	
V-25433	A	10/5/72	
V-25434	A	10/5/72	
V-25435	A	10/5/72	
V-25436	A	10/5/72	
V-25437	A	10/5/72	
V-25438	A	10/5/72	
V-25439	A	10/5/72	
V-25440		5/23/72	
V-25441		5/23/72	
V-25442	A	1/1/73	
V-25443		5/23/72	
V-25444		5/23/72	
V-25445		7/24/72	
V-25446		10/5/72	
V-25447		1/1/73	
V-26001	B		
V-26002	E	7/24/72	
V-26003	H	7/24/72	
V-26019			
V-26025	B		
V-26026			
V-26031	B		
V-26033	A	7/24/72	
V-26034	A	7/24/72	
V-26037	A	6/1/73	
V-26038	A	1/5/72	
V-26040	A		
V-26045	A		
V-26046	C	8/22/69	
V-26047			
V-26049			
V-26050	A	1/30/69	
V-26057			
V-26062	B		
V-26064			
V-26070	A		
V-26071	B		
V-26072	B		
V-26092			
V-26093			

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V-26107	C	8/12/69	H
V-26108	C		
V-26109	C	5/27/69	
V-26110	B		
V-26111	B		
V-26112	B		
V-26113	C	5/27/69	H
V-26115	E	5/23/72	H
V-26116	B	1/8/72	H
V-26118	D	5/23/72	
V-26122	C	11/5/70	H
V-26125			H
V-26133			H
V-26130			H
V-26139	B	10/5/72	
V-26165	B	8/9/71	H
V-26169	A		H
V-26178	C	5/23/72	H
V-26183			
V-26184			
V-26186			
V-26196			H
V-26197	A	3/26/73	H
V-26198	A		H
V-26199	C	5/23/72	H
V-26200	C	5/23/72	H
V-26201	C	5/23/72	H
V-26202	E	5/23/72	H
V-26203	C	11/5/70	H
V-26204	F	5/23/72	H
V-26207	A	1/8/72	H
V-26209	A	11/5/70	H
V-26217	A	6/20/69	H
V-26218	C	10/5/72	H
V-26222	A	10/5/72	H
V-26223	A	1/8/72	H
V-26235	E	3/25/71	
V-26243	C	5/23/72	H
V-26245	A		H
V-26247	D	8/12/69	H
V-26250			H
V-26261	C	6/3/74	H
V-26266			H
V-26267	A	3/2/72	
V-26274	E	6/17/70	H
V-26276	G	3/2/72	
V-26317	A	8/9/71	H
V-26323			
V-26324	A		
V-26327	C		
V-26329	B	1/8/72	H
V-26333	C	5/23/72	
V-26334	A	1/8/72	

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V-26336	A	1/5/72	H
V-26346	F	6/17/70	H
V-26351	C	2/9/73	H
V-26352			H
V-26353	B	9/17/70	H
V-26360	A		H
V-26362	A		H
V-26363	A		H
V-26365	A		H
V-26373	A		H
V-26377	B	1/30/69	H
V-26378			H
V-26379	A		H
V-26380	A	8/82/69	H
V-26381	A	8/82/69	H
V-26382	A	8/82/69	H
V-26383	A	8/82/69	H
V-26384	A	8/82/69	H
V-26386	B	5/87/69	H
V-26387	B	7/84/72	H
V-26388	B		H
V-26389	B	7/84/72	H
V-26390	A	5/87/69	H
V-26391	A	5/87/69	H
V-26394	B	8/12/69	H
V-26396	A	10/5/72	H
V-26399	A		H
V-26400	E	5/23/72	H
V-26401	G	8/9/71	H
V-26402	E	3/25/71	H
V-26403	E	3/25/71	H
V-26404	F	3/25/71	H
V-26405	F	3/25/71	H
V-26406	D	8/9/71	H
V-26407	F	3/25/71	H
V-26408	F	3/25/71	H
V-26409	F	3/25/71	H
V-26410	F	3/25/71	H
V-26411	F	3/25/71	H
V-26412	F	8/9/71	H
V-26413	B	1/30/69	H
V-26414	A		H
V-26415	A		H
V-26416	A		H
V-26417	F	3/25/71	H
V-26418	F	3/25/71	H
V-26419	F	3/25/71	H
V-26420	F	8/9/71	H
V-26421	F	3/25/71	H
V-26422	F	3/25/71	H
V-26423	E	3/25/71	H
V-26424	E	3/25/71	H
V-26431	B	1/5/72	H



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V-26432			
V-26433			
V-26434			
V-26435	A		
V-26436	B	3/25/71	
V-26437	C	3/25/71	
V-26438			
V-26439	D	5/23/72	
V-26440			
V-26441	A	11/5/70	
V-26442			
V-26443	A	6/17/70	
V-26444			
V-26445			
V-26446			
V-26447			
V-26448	D	3/2/72	
V-26449			
V-26450			
V-26451			
V-26452			
V-26453			
V-26454			
V-26455			
V-26456			
V-26457			
V-26458			
V-26459			
V-26460	A	1/5/72	
V-26461	C	2/9/73	
V-26462	A	10/5/72	
V-26463	B	3/25/71	
V-26464	B	3/25/71	
V-26465	B	3/2/72	
V-26466	C	1/5/72	
V-26467	C	1/5/72	
V-26468	D	8/9/71	
V-26469	B	3/25/71	
V-26470	B	11/5/70	
V-26471	B	3/25/71	
V-26472	C	8/9/71	
V-26473	B	1/5/72	
V-26474	A	1/5/72	
V-26475	A	6/17/70	
V-26476	A	1/5/72	
V-26477	A	5/27/69	
V-26478	A	1/5/72	
V-26479	B	1/5/72	
V-26480	B	6/17/70	
V-26481		8/12/69	
V-26482		8/22/69	
V-26483		11/26/69	
V-26484		11/26/69	
V-26485		3/25/71	
V-26486	B	10/4/74	
V-26487	D	10/4/74	
V-26488	D	11/5/70	
V-26489	A	6/1/73	
V-26490	B	6/17/70	

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V-26496	B	1/5/72	H
V-26497	E	10/4/74	H
V-26500		9/17/70	H
V-26501		9/17/70	H
V-26502		9/17/70	H
V-26503		9/17/70	H
V-26504		9/17/70	H
V-26505		9/17/70	H
V-26506	A	7/24/72	H
V-26507		1/21/71	H
V-26508		1/21/71	H
V-26509	A	5/23/72	H
V-26510	A	5/23/72	H
V-26511	A	8/9/71	H
V-26512		3/25/71	H
V-26513	A	8/9/71	H
V-26514	A	1/5/72	H
V-26515	C	7/24/72	H
V-26516	A	7/24/72	H
V-26517	B	9/23/72	H
V-26519	C	3/8/72	H
V-26520	C	8/9/71	H
V-26521	C	8/9/71	H
V-26522	B	8/9/71	H
V-26523	C	8/9/71	H
V-26524	B	8/9/71	H
V-26525	C	8/9/71	H
V-26526	C	5/23/72	H
V-26527		1/5/72	H
V-26528	B	3/16/73	H
V-26529	A	7/24/72	H
V-26530	B	7/24/72	H
V-26531	A	7/24/72	H
V-26532	C	6/1/73	H
V-26533 (CANCEL)	A	10/4/74	H
V-26534		8/9/71	H
V-26535		8/9/71	H
V-26536	A	5/23/72	H
V-26537		8/9/71	H
V-26538	A	3/16/73	H
V-26539		8/9/71	H
V-26540	A	8/9/71	H
V-26541	B	1/5/72	H
V-26542	A	1/5/72	H
V-26543		8/9/71	H
V-26544		8/9/71	H
V-26545	A	5/23/72	H
V-26546		1/5/72	H
V-26547	A	10/4/74	H
V-26548	C	10/4/74	H
V-26549	D	10/4/74	H
V-26550	A	1/5/72	H
V-26551	A	1/5/72	H

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V-26552	A	7/24/72	I
V-26553		1/5/72	
V-26554	B	6/1/73	H
V-26555	A	7/24/72	H
V-26556	A	7/24/72	H
V-26557		1/5/72	H
V-26558		1/5/72	H
V-26559	A	1/5/72	H
V-26560		1/5/72	H
V-26561	B	2/9/73	H
V-26562		1/5/72	H
V-26564		1/5/72	H
V-26565		1/5/72	H
V-26566		1/5/72	H
V-26567		1/5/72	H
V-26568	A	7/24/78	H
V-26569	A	7/24/72	H
V-26570	A	7/24/72	H
V-26571	A	7/24/72	H
V-26572	A	7/24/72	H
V-26573	A	7/24/72	H
V-26574	A	1/1/73	H
V-26575		1/5/72	H
V-26577	A	7/24/72	H
V-26578	A	7/24/72	H
V-26579	A	3/2/72	H
V-26580	A	3/2/72	H
V-26581	A	3/2/72	H
V-26582	A	3/2/72	H
V-26583		1/5/72	H
V-26584		1/5/72	H
V-26585		1/5/72	H
V-26586	A	3/2/72	H
V-26587	A	3/2/72	H
V-26588	A	7/24/72	H
V-26589	A	7/24/72	H
V-26590	A	7/24/72	H
V-26591		1/5/72	H
V-26592		1/5/72	H
V-26593		1/5/72	H
V-26594		1/5/72	H
V-26595	A	7/24/72	H
V-26596	A	6/1/73	H
V-26599	A	8/3/73	H
V-26600	B	12/10/73	H
V-26601		3/2/72	H
V-26602	A	1/1/73	H
V-26603		3/2/72	H
V-26605	A	6/1/73	H
V-26606	A	5/23/72	H
V-26608		5/23/72	H
V-26609	A	6/1/73	H
V-26612		5/23/72	H

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V-26614		5/23/72	H
V-26615		5/23/72	H
V-26616		5/23/72	H
V-26617	A	8/3/73	-
V-26618		5/23/72	H
V-26620		5/23/72	H
V-26622		7/24/72	-
V-26624	A	12/10/73	H
V-26625		2/9/73	H
V-26627		2/9/73	H
V-26628		2/9/73	H
V-26629	A	6/8/73	H
V-26630		6/8/73	H
V-26631		6/8/73	H
V-26632		6/8/73	H
V-26633		6/1/73	H
V-26634		6/1/73	H
V-26635		6/1/73	H
V-26636		6/1/73	H
V-26637		6/1/73	H
V-26638		6/1/73	H
V-26639		6/1/73	H
V-26640		6/1/73	H
V-26641		6/1/73	H
V-26642		6/1/73	H
V-26643		6/1/73	H
V-26644		6/1/73	H
V-26645		6/1/73	H
V-26646		6/1/73	H
V-26647		6/8/73	H
V-26648		6/8/73	H
V-26649	A	12/10/73	H
V-26650		6/8/73	H
V-26651		6/8/73	H
V-26652		6/1/73	H
V-26653	A	12/10/73	H
V-26654		6/8/73	H
V-26655		6/8/73	H
V-26656		6/8/73	H
V-26657		6/1/73	H
V-26658		6/8/73	H
V-26659		6/1/73	H
V-26660		6/1/73	H
V-26661	A	12/10/73	H
V-26662		6/1/73	H
V-26663		6/1/73	H
V-26664		6/1/73	H
V-26665		6/1/73	H
V-26666		6/1/73	H
V-26667		6/1/73	H
V-26668		6/1/73	H
V-26669		6/1/73	H
V-26670		6/1/73	H

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V-26671		6/1/73	H
V-26672		6/1/73	H
V-26673		6/1/73	H
V-26674		8/8/73	H
V-26675		8/8/73	H
V-26676		8/8/73	H
V-26677		8/8/73	H
V-26678		8/8/73	H
V-26679		8/3/73	H
V-26680		6/3/74	H
V-26681		6/3/74	H
V-26682		6/3/74	H
V-26683		10/4/74	H
V-27009	A	9/17/70	H
V-27021	B	8/12/69	H
V-27025	B	7/24/72	H
V-27027	B	8/12/69	H
V-27029	G	3/2/72	H
V-27030	A	9/17/70	H
V-27031	A	9/17/70	H
V-27032	A	9/17/70	H
V-27033	A	9/17/70	H
V-27034	A	9/17/70	H
V-27035	B	9/17/70	H
V-27036	A	9/17/70	H
V-27038	C	9/17/70	H
V-27040	C	3/16/73	H
V-27047	B	9/17/70	H
V-27056	I	3/16/73	H
V-27058	H	3/16/73	H
V-27060	J	3/16/73	H
V-27061	H	3/16/73	H
V-27062	I	3/16/73	H
V-27063	J	3/16/73	H
V-27064	J	3/16/73	H
V-27065	J	3/16/73	H
V-27066	J	3/16/73	H
V-27067	G	5/23/72	H
V-27068	I	2/9/73	H
V-27071	A	9/17/70	H
V-27077	B	12/10/73	H
V-27079	B	7/24/72	H
V-27087	C	3/2/72	H
V-27092	A		H
V-27093	E	7/24/72	H
V-27094	D	3/85/71	H
V-27095	B	8/9/71	H
V-27096	A	8/9/71	H
V-27098	A	1/21/71	H
V-27099	A	8/9/71	H
V-27104	C	7/24/72	H
V-27104	E	7/24/72	H
V-27110			H

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V-27111	B	2/9/70	
V-27112	B	2/9/70	
V-27113	E	5/23/72	
V-27114	C	3/25/71	
V-27115	E	2/9/73	
V-27116	A	8/22/69	
V-27122	B	2/9/70	
V-27137	B	9/17/70	
V-27138	B	9/17/70	
V-27139	E	7/24/72	
V-27143	B	8/9/71	
V-27145	F	5/23/72	
V-27148	E	2/9/73	
V-27149	E	3/25/71	
V-27151	D	3/25/71	H
V-27153	B		
V-27154	B	9/17/70	
V-27156	D	8/9/71	
V-27166	A	8/9/71	
V-27167	A	8/9/71	
V-27169	A	8/9/71	
V-27170	A	8/9/71	
V-27171	A	8/9/71	
V-27172	A	8/9/71	
V-27173	A	8/9/71	
V-27175	C	1/5/72	
V-27183	B	11/01/69	
V-27184	A	3/25/71	H
V-27185	A	3/25/71	H
V-27188	A	3/25/71	H
V-27189	A	3/25/71	H
V-27190	E	3/2/72	H
V-27191	E	12/10/73	
V-27193	B	1/5/72	
V-27194			
V-27195	D	3/25/71	
V-27196	D	7/24/72	
V-27197	G	2/9/73	
V-27198	B	1/5/72	
V-27199	D	3/2/72	
V-27200	A	2/9/70	
V-27201	A	8/9/71	
V-27202	C	1/5/72	
V-27203	B	6/17/70	H
V-27204	A	9/17/70	
V-27206	E	1/5/72	
V-27208	A	3/2/72	
V-27209	A	1/5/72	
V-27211	A	9/17/70	
V-27212	A	9/17/70	
V-27213	B	5/23/72	
V-27214	A	2/9/70	
V-27215		7/21/69	

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V-27219	C	3/16/73	B
V-27222		4/10/70	B
V-27223	C	2/9/73	B
V-27224	A	3/25/71	B
V-27225	A	5/23/72	B
V-27226		9/17/70	B
V-27227		11/5/70	B
V-27228		11/5/70	B
V-27229		8/9/71	B
V-27230	B	3/16/73	B
V-27231		8/9/71	B
V-27232	A	1/1/73	B
V-27233	B	10/5/72	B
V-27234		1/5/72	B
V-27235		1/5/72	B
V-27236	A	12/10/73	B
V-27237	A	7/24/72	B
V-27238	A	12/10/73	B
V-27239		1/5/72	B
V-27240		1/5/72	B
V-27241		1/5/72	B
V-27242		1/5/72	B
V-27244		1/5/72	B
V-27245		3/2/72	B
V-27246	A	2/9/73	H
V-27247		3/2/72	B
V-27248	A	5/23/72	B
V-27249	B	8/3/73	B
V-27250	B	10/4/74	B
V-27251		10/5/72	B
V-28003 (CANCEL)	C	10/4/74	B
V-28004 (CANCEL)	C	10/4/74	B
V-28005	C	10/4/74	B
V-28008 (CANCEL)	C	10/4/74	B
V-28009 (CANCEL)	B	10/4/74	B
V-28011	D	2/9/70	B
V-28012	D	8/12/69	B
V-28013	E	1/21/71	B
V-28014	G	8/12/69	B
V-28016	E	9/17/70	B
V-28019			B
V-28023	C	5/27/69	H
V-28024	A		B
V-28027			B
V-28029	E	4/10/70	B
V-28031	A	3/25/71	B
V-28032	D		B
V-28035	I	6/1/73	B
V-28037	C	6/8/74	B
V-28044	C	8/9/71	B
V-28046	C	5/23/72	B
V-28047	C	2/9/73	B
V-28048	A	8/22/69	B

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V-28049	I	5/23/72	
V-28050	H	5/23/72	
V-28051	I	10/5/72	
V-28053	E	9/17/70	
V-28054	D	10/4/74	
V-28055	E	10/4/74	
V-28056	Q	10/4/74	
V-28059	E	1/81/71	
V-28060	C	6/20/69	
V-28061	B	6/20/69	
V-28062	C	6/20/69	
V-28063	D	1/1/73	
V-28065	B	5/27/69	
V-28067	C	1/81/71	
V-28068	B	1/5/72	
V-28069	B	3/25/71	
V-28070	D	10/4/74	
V-28072	D	6/17/70	
V-28074	G	10/5/72	
V-28083	G	1/1/73	
V-28085	B	5/23/72	
V-28086	C	3/16/73	
V-28088	A	5/23/72	
V-28089	A	5/23/72	
V-28090	A	5/23/72	
V-28091	A	5/23/72	
V-28092	B	5/23/72	
V-28098	B	1/5/72	
V-28102	B	3/25/71	
V-28105	H	5/23/72	
V-28106	A	2/9/70	
V-28109			
V-28120	D	1/1/73	
V-28121	F	2/9/73	
V-28126	C	3/25/71	
V-28127	D	1/5/72	
V-28128	D	8/9/71	
V-28135	B	8/9/71	
V-28138	C	8/9/71	
V-28139	C	3/25/71	
V-28140	C	3/25/71	
V-28141	C	3/25/71	
V-28142	G	3/2/72	
V-28144	B	11/5/70	
V-28145	C	3/25/71	
V-28146	B	12/10/73	
V-28147	A	9/17/70	
V-28150 (CANCEL)	C	10/4/74	
V-28152	B	6/1/73	
V-28153	B	3/25/71	
V-28154	A	8/9/71	
V-28156	A	8/9/71	
V-28160	A	8/9/71	



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V-28161	A	8/9/71	
V-28162	A	8/9/71	
V-28163	A	8/9/71	
V-28164	B	8/9/71	
V-28165	A	8/9/71	
V-28167	A	8/9/71	
V-28168	A	8/9/71	
V-28169	A	8/9/71	
V-28170	A	8/9/71	
V-28171	C	3/25/71	
V-28172	B	1/5/72	
V-28175	B	3/25/71	H
V-28177	C	8/12/69	
V-28180			
V-28181	A	10/5/72	
V-28182		3/10/69	
V-28184 (CANCEL)	B	10/4/74	
V-28185	B	5/23/72	
V-28186	B	9/17/70	
V-28187	E	5/23/72	
V-28188	B	5/23/72	
V-28189		9/17/70	
V-28190		9/17/70	
V-28191		9/17/70	
V-28193		11/10/71	
V-28194	A	5/23/72	
V-28195	A	5/23/72	
V-28196	A	5/23/72	
V-28197	A	1/1/73	
V-28198	A	10/5/72	
V-28199	B	6/8/74	
V-28200	A	10/5/72	
V-28201		1/5/72	
V-28202	A	7/24/72	
V-28203	B	10/4/74	
V-28204	A	6/1/73	
V-28205	A	10/4/74	
V-28206		1/5/72	
V-28207		1/5/72	
V-28208		1/5/72	
V-28209	A	6/1/73	
V-28210	A	7/24/72	
V-28211	B	6/8/74	
V-28212	A	6/8/74	
V-28213	A	5/23/72	
V-28214	B	6/1/73	
V-28215		1/5/72	
V-28216		1/5/72	H
V-28217		1/5/72	
V-28218	B	10/4/74	
V-28219		1/5/72	
V-28220		1/5/72	
V-28221	A	2/9/73	

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V-28222		3/2/72	
V-28223	B	10/4/74	
V-28224	A	6/1/73	
V-28225		3/2/72	
V-28226	A	2/9/73	
V-28227		5/23/72	
V-28228	A	7/24/72	
V-28229		7/24/72	
V-28230		7/24/72	
V-28231		7/24/72	
V-28232	A	10/4/74	
V-28233	A	10/4/74	
V-28234	A	1/1/73	
V-28235		7/24/72	
V-28236		7/24/72	
V-28237		7/24/72	
V-28238		10/5/72	
V-28239		10/5/72	
V-28240		1/1/73	
V-28241		1/1/73	
V-28243		2/9/73	
V-28250		8/8/73	
V-29000	A		
V-29001	A		
V-29002	A		
V-29003	B		
V-29005			
V-29020	C	3/25/71	
V-29021	C	3/25/71	
V-29023	D	2/9/73	
V-29024	C	3/25/71	
V-29027	H	2/9/73	
V-29028	J	1/1/73	
V-29029	D	1/1/73	
V-29030	E	11/5/70	
V-29033	D	6/1/73	
V-29037	I	10/5/72	
V-29038	E	2/9/73	
V-29048	E	3/25/71	
V-29049	D	2/9/73	
V-29050	C	3/25/71	
V-29053	D	7/24/72	
V-29054	B	7/24/72	
V-29054	C	5/23/72	
V-29056	C	1/5/72	
V-29058	B	3/25/71	
V-29059	C	5/23/72	
V-29060	D	7/24/72	
V-29061	B	3/25/71	
V-29062		8/12/69	
V-29063	C	3/25/71	
V-29064		9/17/70	
V-29065	B	7/24/72	

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V-29113	E	3/2/72	H
V-29114	D	5/23/72	H
V-29115		3/25/71	H
V-29116	A	7/24/72	H
V-29117	A	7/24/72	H
V-29118	A	7/24/72	H
V-29119	A	6/1/73	H
V-29121		5/23/72	H
V-29122		1/5/72	H
V-29126		1/5/72	H
V-29128	A	2/9/73	H
V-29129		1/5/72	H
V-29130	C	6/1/73	H
V-29132		3/2/72	H
V-29133	D	12/10/73	H
V-29137	B	1/1/73	H
V-29138	B	1/1/73	H
V-29139	A	1/1/73	H
V-29140		6/1/73	H
V-29141		8/3/73	H
V-30003	H	1/21/71	H
V-30005	H	5/23/72	H
V-30008	D	6/1/73	H
V-30024	H	8/9/71	H
V-30026	A		H
V-30030	D	2/9/73	H
V-30032			H
V-30043	A		H
V-30046			H
V-30047			H
V-30048			H
V-30049			H
V-30050 (CANCEL)	A	10/4/74	H
V-30051	A		H
V-30052			H
V-30055			H
V-30057			H
V-30058	A		H
V-30059	A		H
V-30060	A		H
V-30061			H
V-30062	B		H
V-30063			H
V-30065			H
V-30066			H
V-30069			H
V-30071			H
V-30072			H
V-30073	A	11/5/70	H
V-30075	A	9/17/70	H
V-30076			H
V-30077			H
V-30078			H



V-30079	A		I
V-30081	A		I
V-30082			I
V-30083	A		I
V-30088	A		I
V-30090	B		I
V-30092			I
V-30093			I
V-30094	B	7/24/72	I
V-30095			I
V-30096			I
V-30097	A		I
V-30098			I
V-30100	A		I
V-30101			I
V-30103			I
V-30105			I
V-30106			I
V-30108	A	1/5/72	I
V-30111			I
V-30112			I
V-30115 (CANCEL)	A	10/4/74	I
V-30117			I
V-30118			I
V-30119	A		I
V-30120	A		I
V-30121	A		I
V-30122	A		I
V-30124	A		I
V-30126	A		I
V-30127			I
V-30129			I
V-30130	A		I
V-30132			I
V-30134			I
V-30135	A	1/80/69	I
V-30141	A		I
V-30142	A		I
V-30143	A	3/10/69	I
V-30146	A		I
V-30147			I
V-30148 (CANCEL)	A	10/4/74	I
V-30149 (CANCEL)	A	10/4/74	I
V-30150			I
V-30151	A		I
V-30152	A		I
V-30153	A	11/5/70	I
V-30154	A	11/5/70	I
V-30156			I
V-30157	A	11/5/70	I
V-30158	A	9/17/70	I
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V-30161			I

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V-30170			H
V-30171	A		H
V-30174	A		H
V-30175	A		H
V-30180	A		H
V-30183			H
V-30184			H
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V-30191			H
V-30198			H
V-30201	A		H
V-30210			H
V-30211			H
V-30215	A		H
V-30216	A	7/21/69	H
V-30217	A	7/24/72	H
V-30219			H
V-30220			H
V-30223			H
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V-30225			H
V-30227			H
V-30228			H
V-30230			H
V-30231	A	3/10/69	H
V-30233	A	1/5/72	H
V-30234			H
V-30235			H
V-30239			H
V-30244			H
V-30246			H
V-30247			H
V-30248			H
V-30249	A		H
V-30250			H
V-30251			H
V-30253	A		H
V-30255			H
V-30258	A		H
V-30262			H
V-30265	B	1/5/72	H
V-30267			H
V-30268			H
V-30269			H
V-30270	A		H
V-30274 (CANCEL)	A	10/4/74	H
V-30275	A		H
V-30280			H
V-30281			H
V-30282	A	1/5/72	H



V-30284			H
V-30288			H
V-30289			H
V-30291			H
V-30292			H
V-30294			H
V-30295	A		H
V-30299			H
V-30302			H
V-30305	A	3/85/71	H
V-30307	B	1/5/72	H
V-30309			H
V-30310	A		H
V-30312	A		H
V-30314	A		H
V-30315	A		H
V-30316	A		H
V-30317	A		H
V-30318	A		H
V-30319	B	1/5/72	H
V-30320	B	1/5/72	H
V-30321	A		H
V-30322	B	1/5/72	H
V-30325			H
V-30329			H
V-30330			H
V-30333			H
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V-30348			H
V-30351	A		H
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V-30358			H
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V-30361 (CANCEL)	B	10/4/74	H
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V-30369			H
V-30375	A		H
V-30377	A	6/3/74	H
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V-30381	A		H
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V-30383	A		H
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V-30402	A		H
V-30404	A	1/5/72	H
V-30406	B	1/5/72	H
V-30407	A		H
V-30408	A		H
V-30410	A		H
V-30412			H
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V-30419 (CANCEL)	A	10/4/74	H
V-30420	B	6/5/74	H
V-30421	A		H
V-30423			H
V-30424	A		H
V-30425	A		H
V-30426	B		H
V-30428			H
V-30434	A		H
V-30436	A		H
V-30438	A		H
V-30439			H
V-30442	A		H
V-30443	A		H
V-30444			H
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V-30447			H
V-30448			H
V-30452 (CANCEL)	B	10/4/74	H
V-30454			H
V-30455			H
V-30457	A		H
V-30458			H
V-30459	B		H
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V-30462			H
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V-30464			H
V-30466			H
V-30467			H
V-30469			H
V-30470			H
V-30478			H
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V-30506			H
V-30508	A		H
V-30509			H
V-30510			H
V-30512			H
V-30514	A	1/30/69	H
V-30515			H
V-30517			H
V-30524			H
V-30526			H
V-30527			H
V-30528			H
V-30529			H
V-30530			H
V-30531	A	1/5/72	H
V-30532	A	1/5/72	H
V-30533	A	1/5/72	H
V-30534	C	9/17/70	H
V-30535	B	1/5/72	H
V-30539	I	3/2/72	H
V-30540			H
V-30541			H
V-30542			H
V-30543			H
V-30544	E	10/5/72	H
V-30545			H
V-30546			H
V-30547			H
V-30548			H
V-30550			H
V-30552			H
V-30553			H
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V-30560	B	9/17/70	H
V-30563	A	8/12/69	H
V-30564	B	3/2/72	H
V-30565		6/20/69	H
V-30569		8/12/69	H
V-30571	A	1/5/72	H
V-30572		6/17/70	H
V-30573		6/17/70	H
V-30574		11/5/70	H
V-30575	B	3/25/71	H
V-30576	B	1/5/72	H
V-30577		1/21/71	H
V-30578		1/5/72	H
V-30579		1/5/72	H
V-30590	D	5/23/72	H



V-30593		3/2/72	H
V-30594		5/23/72	H
V-30602		5/23/72	H
V-30603		5/23/72	H
V-30604		5/23/72	H
V-30605		5/23/72	H
V-30606	A	8/8/73	H
V-30607		5/23/72	H
V-30608		5/23/72	H
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V-30610	D	6/8/74	H
V-30611		1/1/73	H
V-30613		2/9/73	H
V-31011	E	10/4/74	H
V-31012	G	5/23/72	H
V-31015	B	11/5/70	H
V-31025	E	8/9/71	H
V-31026	E	8/9/71	H
V-31028	C	3/2/72	H
V-31031	A	1/1/73	H
V-31032	C	1/5/72	H
V-31042	C	3/25/71	H
V-31045	E	1/5/72	H
V-31046	D	6/17/70	H
V-31047	D	1/5/72	H
V-31048			H
V-31049			H
V-31052	D	2/9/73	H
V-31056	C	8/9/71	H
V-31057	A	1/5/72	H
V-31062	C	9/17/70	H
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V-31066		6/17/70	H
V-31067	A	3/25/71	H
V-31108	D	10/4/74	H
V-31109		1/5/72	H
V-31110		1/5/72	H
V-31112	D	12/10/73	H
V-31114	A	1/1/73	H
V-31115		1/5/72	H
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V-31121		5/23/72	H
V-31122		5/23/72	H
V-31123		5/23/72	H
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V-31125	A	1/1/73	H
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V-31129	B	2/9/73	
V-31130		10/5/72	
V-31131		10/5/72	
V-31133	A	2/9/73	
V-31134		10/5/72	
V-31135		10/5/72	
V-31138	A	3/16/73	
V-32000	A	3/2/72	
V-32001	C	3/16/73	
V-32049		10/5/72	
V-33011	G	5/23/72	
V-33013	F	8/3/73	
V-33021	H	2/9/73	
V-33029	C	11/26/69	
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V-33033	D	10/5/72	
V-33034	D	5/23/72	
V-33035	A	7/24/72	
V-33036	A	7/24/72	
V-33037	A	7/24/72	
V-33053			
V-33055 (CANCEL)	A	6/3/74	
V-34008	E	9/17/70	
V-34010	C	3/2/72	
V-34011	C	3/2/72	
V-34012			
V-34013	B	6/17/70	
V-34014	K	2/9/73	
V-34015			
V-34016	C	1/5/72	
V-34017	E	10/4/74	
V-34030	C	1/5/72	
V-34041	E	1/5/72	
V-34044	A	3/2/72	
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V-34047	I	10/4/74	
V-34048	B	3/25/71	
V-34050	A	5/23/72	
V-34051	A	5/23/72	
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V-34054	A	5/23/72	
V-34055	A	5/23/72	
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V-35002	B		
V-35003	B		
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V-36028	A		
V-36029	C		
V-36030	C	7/24/72	
V-36031	A	1/5/72	
V-36032	A	1/5/72	
V-36033			
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V-36038	G	10/4/74	
V-36039	C	1/5/72	
V-36040	B	3/10/69	
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V-36045	C	3/10/69	
V-36046	C	10/4/74	
V-36048	C	5/23/72	
V-36052	A		
V-36053	B	1/5/72	
V-36053	D	7/24/72	
V-36054	B	1/5/72	
V-36055	B	1/5/72	
V-36057	B	1/5/72	
V-36063	C	10/5/72	
V-36064	B	10/5/72	
V-36065	C	8/9/71	
V-36066	C	8/9/71	
V-36068	B	7/24/72	
V-36069	C	1/5/72	
V-36070	A		
V-36071	C	7/24/72	
V-36073	E	1/5/72	
V-36074	D	1/5/72	
V-36077	C	1/5/72	
V-36078	C	1/5/72	
V-36079	A		
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V-36117		6/17/70	
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V-36123		6/17/70	
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V-36125		6/17/70	H
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V-36127		9/17/70	H
V-36128		9/17/70	
V-36129		9/17/70	
V-36130		9/17/70	
V-36131		9/17/70	
V-36132		9/17/70	H
V-36133		11/5/70	H
V-36134	A	3/25/71	H
V-36136	A	7/24/72	H
V-36137	A	5/23/72	H
V-36138	A	7/24/72	H
V-36139	A	7/24/72	
V-36141		8/9/71	
V-36142	A	1/5/72	H
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V-36800	A	3/25/71	H
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V-36803	A	8/9/71	
V-36804	A	8/9/71	
V-36805	A	3/25/71	
V-36807	A	3/25/71	H
V-36808	A	3/25/71	H
V-36809	B	10/5/72	H
V-36810		3/2/72	
V-36811	A	3/25/71	
V-36812	A	3/25/71	H
V-36813	A	3/25/71	H
V-36814	A	3/25/71	H
V-36815	A	3/25/71	H
V-36816	A	3/25/71	H
V-36818	A	3/25/71	H
V-36819	A	8/9/71	
V-36821	A	3/25/71	H
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V-36823	A	3/2/72	
V-36826		3/2/72	H
V-36827	A	3/25/71	
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V-36838	A	3/25/71	H
V-36839	A	1/5/72	H
V-36840	A	1/5/72	H
V-36842	A	8/9/71	
V-36844	A	1/5/72	H
V-36846	A	12/10/73	H
V-36848		3/25/71	
V-36849	A	3/25/71	
V-36850	A	3/25/71	
V-36851	A	3/25/71	H
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V-36853	A	3/25/71	H
V-36854	A	3/25/71	
V-36856	A	3/25/71	
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V-36872	A	8/9/71	H
V-36873	A	3/25/71	H
V-36875	A	3/25/71	H
V-36876	A	3/25/71	H
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V-36880		1/1/73	H
V-36883		1/5/72	H
V-36884		3/2/72	H
V-36885		8/3/73	H
V-36887	A	3/25/71	H
V-36888	A	3/25/71	H
V-36891		8/9/71	H
V-36892	A	8/9/71	H
V-36893	A	3/25/71	H
V-36896	B	12/10/73	H
V-36900	A	1/5/72	H
V-36901	A	3/25/71	H
V-36905	A	3/25/71	H
V-36906	A	3/25/71	H
V-36908	A	8/9/71	H
V-36912	A	3/25/71	H
V-36913	A	3/25/71	H
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V-36922	A	3/25/71	H
V-36923	A	3/25/71	H
V-36924	B	3/25/71	H
V-36925	A	3/25/71	H
V-36926	A	3/25/71	H
V-36927	A	3/25/71	H
V-36928	A	3/25/71	H
V-36930	A	3/25/71	H
V-36931	A	3/25/71	H
V-36932	A	3/25/71	H
V-36933	A	3/25/71	H
V-36934	A	3/25/71	H
V-36935	A	6/1/73	H
V-36936	A	8/3/73	H
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V-38009		1/5/72	H
V-38010	A	10/4/74	H
V-38011		1/5/72	H
V-39000	C	3/25/71	H
V-39001	E	7/24/72	H
V-39002	C	3/25/71	H
V-39003	C	3/25/71	H
V-39004	D	7/24/72	H
V-39005	C	3/25/71	H
V-39007	C	7/24/72	H
V-39008	A	7/24/72	H
V-39009	A	7/24/72	H
V-39010	A	7/24/72	H
V-39011	A	6/1/73	H
V-39012	C	6/1/73	H
V-39013	B	6/1/73	H
V-39014	B	6/1/73	H
V-39015	A	2/9/73	H
V-39016	B	12/10/73	H
V-39017	A	2/9/73	H
V-39018	B	3/16/73	H
V-39019		1/5/72	H
V-39020	A	2/9/73	H
V-39021	B	8/3/73	H
V-39022	B	8/3/73	H
V-39023	A	2/9/73	H
V-39024		3/2/72	H
V-39025		3/2/72	H
V-39026	A	2/9/73	H
V-39027		3/2/72	H
V-39028		3/2/72	H
V-39029		3/2/72	H
V-39030		3/2/72	H
V-39031		5/23/72	H

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1 TEST TITLE SATURN S-IB RP-1 TANKS PNEUMATIC TEST		2 KSC TEST NUMBER V-20083	
3 EFFECTIVITY AS REQUIRED			
4 TEST OBJECTIVES THE PURPOSE OF THIS TEST IS TO CONDUCT A PNEUMATIC LEAK TEST ON THE S-IB STAGE RP-1 FUEL TANK FORWARD BULKHEADS.			
5 TEST CLASSIFICATION EQUIPMENT STATUS CODE INFORMATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS PROCEDURE IS HAZARDOUS BECAUSE RP-1 FUEL LEVEL WILL BE RAISED TO THE OVERFILL SENSOR (APPROX. 637 INCHES) AND THE S-IB STAGE RP-1 FUEL TANKS WILL BE PRESSURIZED TO 21 PSIG.  AFTER ALL SYSTEMS ARE RECONFIGURED, THE PAD WILL BE CLEARED FOR THE RP-1 LEVEL ADJUST OPERATION (TO OVERFILL SENSOR). A CREW WILL BE CLEARED INTO THE PAD TO CLOSE THE PTCS BENTON VALVES AND DISCONNECT THE RP-1 SENSE LINES. AFTER THE CREW HAS CLEARED THE PAD THE S-IB STAGE RP-1 FUEL TANKS WILL BE PRESSURIZED TO 1 PSIG AND A PRESSURE DROP-OFF TEST WILL BE CONDUCTED FOR 15 MINUTES. IF THE PRESSURE DROP-OFF TEST IS SATISFACTORY, THE TANKS WILL BE PRESSURIZED TO 10 PSIG AND ANOTHER PRESSURE DROP-OFF TEST WILL BE CONDUCTED FOR 15 MINUTES. UPON VERIFICATION OF A STABILIZED CONDITION IN THE S-IB STAGE FUEL TANKS, THE PRESSURE IN THE TANKS WILL BE VENTED TO ZERO PSIG. A CREW WILL THEN BE CLEARED TO THE PAD TO PERFORM A VISUAL INSPECTION AND LYE PENETRATE OPERATION. AFTER THIS CREW HAS CLEARED THE PAD, THE S-IB RP-1 FUEL TANKS WILL BE PRESSURIZED TO 21 PSIG THEN IMMEDIATELY VENTED TO ZERO PSIG. A CREW WILL THEN GO TO THE PAD TO CONDUCT LEAK CHECKS, OPEN THE PTCS BENTON VALVES AND CONNECT THE RP-1 SENSE LINES. AFTER THIS CREW HAS CLEARED THE PAD, A RP-1 LEVEL ADJUST OPERATION WILL BE CONDUCTED (LOWER LEVEL TO 600 INCHES). UPON COMPLETION OF THE LEVEL ADJUSTMENT THE PAD WILL BE OPEN FOR NORMAL WORK.			
TEST REQUIREMENTS: NONE			
6 DEV DATE 9/5/74		7 REASON ASTP UPDATE	
8 CONTRACTOR APPROVAL J. B. Owens		9 DATE 12/4/73	
10 NASA/KSC APPROVAL Frank Owens		11 ORGANIZATION LC-ENG	
		12 APPROVAL DATE 12/4/73	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1 TEST TITLE SATURN S-IB RP-1 TANKS PNEUMATIC TEST		2 KSC TEST NUMBER V-20083	
3 EFFECTIVITY AS REQUIRED			
4 LOCATION LC-39, PAD B	5 COMPUTER PROC IDENTIFICATION OAPU	6 EST. TEST TIME 14 HOURS	
7 SUPPORT REQUIREMENTS <div style="display: flex; justify-content: space-between;"> <div> KSC SYSTEMS SAFETY  SECURITY POLICE  FIRE FIGHTING  MEDICAL  LCC MEASUREMENTS  FACILITY MEASUREMENTS  RP-1 SURVEILLANCE CAMERAS  COUNT CLOCK  S-IB STAGE POWER </div> <div> S-IB GROUND POWER  IWS  RP-1 STRIP CHART RECORDERS  PTCS  DDAS  DEE-3  ECS </div> </div>			
8 OTHER APPLICABLE REFERENCE DOCUMENTATION N/A			
9 ITEM CONTINUATION			



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
LAUNCH VEHICLE STRAIN MEASUREMENTS IN HIGH WIND	V-20084	
3. EFFECTIVITY		4. TEST OBJECTIVES
AS REQUIRED		TO OBTAIN LAUNCH VEHICLE STRAIN DATA.
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION		
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
CONFIGURATION: TEST TO BE PERFORMED AT PAD B WITH THE S/V FULLY ASSEMBLED.		
LAUNCH VEHICLE STRAIN MEASUREMENTS (S-1B) AND TIME CORRELATED WIND MEASUREMENTS WILL BE RECORDED & MONITORED ANYTIME HIGH WINDS OCCUR WHICH MIGHT JEOPARDIZE THE STRUCTURE OF THE LAUNCH VEHICLE.		
ADDITIONAL DATA, WHICH IS DESIRABLE, ARE PRIMARY & AUXILIARY DAMPER ARM PRESSURES & POSITIONS AND APOLLO ACCESS ARM EXTENSION.		
TEST REQUIREMENTS:		
B.9.0.1.3.1		
B.9.0.1.3.2		
B.9.0.1.3.3		
6. REV	DATE	REASON
A	9/5/74	ASTP UPDATE
7. CONTRACTOR APPROVAL		8. ORGANIZATION
S/J.D. OWENS		5-8771
9. DATE		10. NASA KSC APPROVAL
2/28/73		S/FRANK BRYAN
11. APPROVAL DATE		12. ORGANIZATION
MARCH 5 '73		LV-ENG

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
LAUNCH VEHICLE STRAIN MEASUREMENTS IN HIGH WIND	V-20084	
3. EFFECTIVITY		4. TEST OBJECTIVES
AS REQUIRED		TO OBTAIN LAUNCH VEHICLE STRAIN DATA.
5. LOCATION	6. COMPUTER PAGE IDENTIFICATION	
LC 39	N/A	
7. SUPPORT REQUIREMENTS		
INTERSTAGE - NONE		
ON COMPLEX SUPPORT - OIS COMMUNICATIONS & RADIO		
OFF COMPLEX SUPPORT - GSE MEASURING (INS)		
8. OTHER APPLICABLE REFERENCE DOCUMENTATION		
9. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE SATURN S-IB FUEL VENT PNEUMATIC TEST		2. KSC TEST NUMBER V-20085
4. TEST OBJECTIVES  THE PURPOSE OF THIS TEST IS TO CONDUCT A PNEUMATIC TEST ON THE S-IB STAGE RP-1 FUEL TANK VENT VALVES.		3. EFFECTIVITY AS REQUIRED
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS PROCEDURE IS HAZARDOUS BECAUSE THE S-IB STAGE RP-1 TANKS WILL BE PRESSURIZED TO 19.5 PSIG. RP-1 TANKS ARE FILLED TO 600 INCH LEVEL.  AFTER S-IB STAGE POWER UP AND ALL SYSTEMS RECONFIGURED, THE S-IB STAGE RP-1 FUEL TANKS WILL BE PRESSURIZED TO 10 PSIG AND A LEAK CHECK CONDUCTED. THE FUEL TANKS WILL THEN BE VENTED TO ZERO PSIG AND THE PAD WILL BE CLEARED. THE S-IB STAGE RP-1 FUEL TANKS WILL THEN BE PRESSURIZED UNTIL EITHER OR BOTH STAGE FUEL VENTS OPEN OR UNTIL 19.5 PSIG IS NOTED ON THE FUEL TANK MONITOR GAUGE. THE FUEL TANKS WILL BE VERIFIED AT ZERO PSIG BEFORE THE PAD IS OPENED.		
TEST REQUIREMENTS:  NONE		
6. REV. DATE A 12/5/74	REASON ASTP UPDATE	7. CONTRACTOR APPROVAL J. Owens
8. ORGANIZATION 5-8771	9. DATE 12/4/73	10. NASA-KSC APPROVAL Frank Bryan
11. ORGANIZATION LV-ENG	12. APPROVAL DATE 12/4/73	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE SATURN S-IB FUEL VENT PNEUMATIC TEST		2. KSC TEST NUMBER V-20085
3. LOCATION LC-39, PAD B		4. COMPUTER PROGRAM IDENTIFICATION QAPU
16. SUPPORT REQUIREMENTS  KSC SYSTEMS SAFETY SECURITY POLICE FIRE FIGHTING MEDICAL LCC MEASUREMENTS FACILITY MEASUREMENTS RP-1 SURVEILLANCE CAMERAS COUNT CLOCK S-IB STAGE POWER		5. EST. TEST TIME 7 HOURS  S-IB GROUND POWER IWS RP-1 STRIP CHART RECORDERS PTCS DDAS DEE-3 ECS
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO-SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE SATURN 1B FIN REPLACEMENT AT PAD B		2. KSC TEST NUMBER V-20086	
		3. EFFECTIVITY AS REQUIRED	
4. TEST OBJECTIVES  TO REPLACE FINS ON THE S-1B STAGE WITH THE LAUNCH VEHICLE AT PAD B.			
5. TEST DETECTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS PROCEDURE IS HAZARDOUS BECAUSE IT REQUIRES TEST PERSONNEL TO WORK AT HEIGHTS, NEAR HEAVY EQUIPMENT AND UNDER SUSPENDED LOADS.  A 65 TON MOBILE CRANE WILL BE USED TO MOVE REPLACEMENT FINS TO THE MOBILE LAUNCHER ZERO LEVEL AND TO UNBOX THE FINS. THE FINS WILL BE INSPECTED, FLOUORESCENT DYE CHECKED AND PREPARED FOR INSTALLATION. SOFT BELLOWS COVERS WILL BE INSTALLED ON LOX AND FUEL SUCTION LINE BELLOWS AND RED FLAGS INSTALLED. CRITICAL DIMENSIONS WILL BE MEASURED PRIOR TO FIN REMOVAL.  FINS WILL BE REMOVED AND REPLACED ONE AT A TIME.  THE HOLDDOWN ARM WILL BE RETRACTED FOR THE FIN BEING REMOVED. HUCK BOLTS WILL BE REMOVED. FIN HANDLING ASSEMBLIES WILL BE ATTACHED. THE HAMMERHEAD CRANE WILL BE USED TO TRANSFER EACH FIN TO THE MOBILE LAUNCHER ZERO LEVEL AND TO HOIST THE REPLACEMENT FIN TO THE LAUNCHER PEDESTAL. SPECIAL HANDLING EQUIPMENT WILL BE USED TO MOVE FINS BETWEEN THE VEHICLE AND THE PEDESTAL. REPLACEMENT FINS WILL BE BOLTED IN PLACE, HOLDDOWN ARMS RELOADED, AND ALIGNMENT ACCOMPLISHED.			
TEST REQUIREMENTS:  NONE			
6. REV. DATE A 7/8/74		REASON AS TP UPDATE	
7. CONTRACTOR APPROVAL <i>J. C. Owens</i>		8. ORGANIZATION 5-8771	
9. DATE 12/4/73		10. APPROVAL DATE 12/4/73	
11. KSC APPROVAL <i>Frank Lopez</i>		12. ORGANIZATION LV-ENG	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE SATURN 1B FIN REPLACEMENT AT PAD B		2. KSC TEST NUMBER V-20086	
		3. EFFECTIVITY AS REQUIRED	
4. LOCATION LC-39B	5. COMPUTER PAGE IDENTIFICATION N/A	6. EST. TEST TIME 3 DAYS	
16. SUPPORT REQUIREMENTS  HEAVY EQUIPMENT PERSONNEL KSC SYSTEM SAFETY SECURITY POLICE CRANE CREWS OTV (OPTIONAL)			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  N/A			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE SATURN 1B LAUNCH VEHICLE T-20 MINUTE SIMULATION TEST		2. KSC TEST NUMBER V-20100 3. EFFECTIVITY AS-206 AND SUBS
4. TEST OBJECTIVES TO MAINTAIN LV FIRING ROOM CREW PROFICIENCY DURING EXTENDED VEHICLE PROCESSING FLOW.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS TEST WILL PROVIDE LVR PROFICIENCY TRAINING OF THE LAUNCH VEHICLE FIRING ROOM CREW, INCLUDING THE REDLINE MONITORS, THROUGH THE USE OF DDAS TAPES SIMULATING LAUNCH VEHICLE AND ASSOCIATED ESE FUNCTIONS OCCURRING DURING THE FINAL 20 MINUTES OF THE SATURN 1B LAUNCH VEHICLE COUNTDOWN.  THE TEST WILL BE RUN WITH DDAS TAPES SIMULATING VEHICLE AND ESE FUNCTIONS. TCE AND A DATA MODIFICATION UNIT (DMU) IS AVAILABLE TO INTRODUCE MALFUNCTIONS AGAINST A BASELINE TAPE.  THE TEST WILL ENABLE THE FIRING ROOM CREW TO SIMULATE A NORMAL LAUNCH CD FROM T-20 MINUTES TO T-0, AND TO REACT TO SIMULATED MALFUNCTIONS TO DETERMINE THE OPERATORS ABILITIES TO COPE WITH MALFUNCTIONS AND EITHER CONTINUE THE TEST OR PROCEED WITH VEHICLE SAFING AND RECYCLE.  THE LAUNCH VEHICLE, AND 110A COMPUTERS ARE NOT REQUIRED.  HARDWARE INDICATIONS WILL NOT BE DISPLAYED. DIGITAL ACQUISITION SYSTEM WILL NOT BE USED FOR THE TEST. BACKUP FIRING ROOM SUPPORT IS NOT REQUIRED.  <div style="text-align: center;">TEST REQUIREMENTS: NONE</div>		
B.	9/15/74	ASTP UPDATE
A.		REVISE DESCRIPTION, ADD DMU CAPABILITY, CHANGE T-15 TO T-20 MINUTES
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL S/J. D. OWEN'S		8. ORGANIZATION 5-8771
9. NASA/KSC APPROVAL S/FRANK BRYAN		10. ORGANIZATION LV-ENG
11. DATE SEPTEMBER 10, 1971		12. APPROVAL DATE FEBRUARY 14, 1972

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE SATURN 1B LAUNCH VEHICLE T-20 MINUTES SIMULATION TEST		2. KSC TEST NUMBER V-20100 3. EFFECTIVITY AS-206 AND SUBS
13. LOCATION LC-39	14. COMPUTER PROC. IDENTIFICATION N/A	15. TEST TIME 4 HOURS
16. SUPPORT REQUIREMENTS DDAS DDAS TAPE RECORDING COUNT CLOCK COUNT CLOCK DISPLAYS COUNT CLOCK SUPERIMPOSED ON TV MONITOR TV MONITOR OIS (RF & AUDIO) OIS RECORDING LV STAFF LOOP LV BACKUP PHONE LOOP (YELLOW PHONE) LCC POWER SUPPLIES LCC STRIP CHART RECORDERS NOT MONITORING HARD WIRE FUNCTIONS  TELEMETRY CHECKOUT EQUIPMENT (TCE) DATA MODIFICATION UNIT (DMU)		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>3</u>	
1. TEST TITLE SATURN IB LAUNCH VEHICLE ELECTRICAL SYSTEMS TEST		2. KSC TEST NUMBER V-20101	
		3. EFFECTIVITY AS-216 AND SUBS	
4. TEST OBJECTIVES			
1. TO ELECTRICALLY MATE THE LAUNCH VEHICLE STAGE INTERFACES AFTER THE LAUNCH VEHICLE HAS BEEN MECHANICALLY MATED. 2. TO VERIFY PROPER OPERATION OF THE LAUNCH VEHICLE SWITCH SELECTORS AND ASSOCIATED GSE. 3. TO VERIFY THAT ALL LAUNCH VEHICLE STAGES CAN SUCCESSFULLY TRANSFER TO INTERNAL POWER BOTH VIA TERMINAL COUNTDOWN SEQUENCER (TCS) AND MANUALLY. 4. TO VERIFY PROPER OPERATION OF EMERGENCY DETECTION SYSTEM (EDS).			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION			
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
A. LAUNCH VEHICLE ELECTRICAL INTERFACE MATE - THE S-IB, S-IVB AND IU WILL BE MECHANICALLY MATED ON ML IN HIGH BAY OF THE VAB.  IN PART I (RESISTANCE MEASUREMENTS), THE LAUNCH VEHICLE STAGES WILL BE ELECTRICALLY ISOLATED AND RESISTANCE MEASUREMENTS WILL BE MADE AT EACH PIN OF THE STAGE INTERFACE CONNECTORS TO THE VEHICLE SKIN. RESISTANCE MEASUREMENTS WILL NOT BE MADE AT FLIGHT CONTROL CABLES. FLIGHT CONTROL CABLES WILL BE MATED THROUGH INTERSTAGE SEPARATION SIMULATORS WITHOUT BREAKOUT BOXES AT THE S-IB/S-IVB INTERFACE, AND MATED DIRECTLY AT THE S-IVB/IU INTERFACE.  IN PART II (VOLTAGE CHECKS), FUSES WILL BE INSTALLED IN BREAKOUT BOXES TO WHICH THE INTERSTAGE CABLES ARE CONNECTED. VEHICLE POWER WILL THEN BE APPLIED AND VOLTAGE MEASUREMENTS WILL BE MADE AT SELECTED POINTS AT THE BREAKOUT BOXES.  THE LAUNCH VEHICLE WILL BE ERECTED ON THE ML IN THE VAB AND ALL STAGES WILL BE MECHANICALLY AND ELECTRICALLY MATED FOR ALL REMAINING PARTS OF THIS TEST.			
B. LAUNCH VEHICLE SWITCH SELECTOR TEST - A MANUAL INTERFACE TEST WILL BE RUN TO VERIFY THE INTERFACE BETWEEN THE IU SWITCH SELECTOR PANEL AND THE LAUNCH VEHICLE SWITCH SELECTORS. THIS TEST WILL VERIFY THE STAGE SELECT SIGNALS AND "ALL ONE'S".  AN AUTOMATED TEST WILL BE PERFORMED TO VERIFY THE INTERFACE BETWEEN THE GROUND COMPUTER AND THE SWITCH SELECTORS USING "FLOATING ONE'S" AND "ALL ONE'S".  A SECOND AUTOMATED TEST WILL BE PERFORMED IN WHICH EACH SWITCH SELECTOR WILL BE INDIVIDUALLY SELECTED AND ALL OUTPUTS COMMANDED TO READ. MALFUNCTIONS WILL BE INTRODUCED TO TEST FOR PROPER RESPONSE IN THE ESE.			
CONTINUED ON PAGE 3			
6. REV	DATE	REASON	APPROVAL
1	9/15/72	ADD RD DOC NO. & AUTO PROG.	<i>J. Owens</i> 9/15/72
2	9/10/72	ADD MFC REQTS & COMP. PROC IDENTIFICATIONS	<i>J. Owens</i> 9/10/72
7. CONTRACTOR APPROVAL		8. DATE	
<i>J. Owens</i>		August 26, 1971	
9. NASA/KSC APPROVAL		10. ORGANIZATION	
<i>Frank Bryan</i>		LU-ENG	
		11. APPROVAL DATE	
		3/14/72	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>3</u>	
1. TEST TITLE SATURN IB LAUNCH VEHICLE ELECTRICAL SYSTEMS TEST		2. KSC TEST NUMBER V-20101	
		3. EFFECTIVITY AS-216 AND SUBS	
13. LOCATION VAB	14. COMPUTER PROC IDENTIFICATION (SEE ITEM 18)		15. EST. TEST TIME 9 HOURS
16. SUPPORT REQUIREMENTS			
RD 26008 GROUND POWER S-IB STAGE POWER S-IVB STAGE POWER IU POWER RCA 110A COMPUTERS FACILITY ECS (GAS) LV ECS (GAS) DDAS DDAS TAPE RECORDING BACK-UP BATTERIES LCC MEASURING (LVO) OAT EQUIPMENT DEE-6			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			
(5) TEST DESCRIPTION (CONTINUED)			
C. LAUNCH VEHICLE POWER TRANSFER TEST - THE TEST WILL BE RUN IN TWO PARTS, THE FIRST PART USING PLUGS-IN CONFIGURATION AND THE SECOND PART USING PLUGS-OUT CONFIGURATION.  IN PART I, PLUGS-IN CONFIGURATION, THE LAUNCH VEHICLE STAGES WILL BE TRANSFERRED TO INTERNAL POWER BY USING AN AUTOMATIC PROGRAM. AFTER VERIFICATION OF NORMAL OPERATION, ALL STAGES WILL BE TRANSFERRED BACK TO EXTERNAL POWER USING EMERGENCY POWER TRANSFER.  IN PART II, PLUGS-OUT CONFIGURATION, THE LAUNCH VEHICLE WILL BE TRANSFERRED TO INTERNAL POWER, SIMULTANEOUSLY BY MANUAL CONTROL. THE STAGES WILL VERIFY NORMAL OPERATION AND TRANSFER BACK TO EXTERNAL POWER INDIVIDUALLY. THE LAUNCH VEHICLE WILL THEN BE TRANSFERRED SIMULTANEOUSLY TO INTERNAL POWER VIA THE TCS. AFTER VERIFICATION OF NORMAL OPERATION, ALL STAGES WILL BE TRANSFERRED BACK TO EXTERNAL POWER UTILIZING S-IB CUTOFF. FINALLY A POWER TRANSFER TO INTERNAL POWER AND BACK TO EXTERNAL POWER BY AN AUTOMATIC PROGRAM WILL BE EXECUTED.			
D. EMERGENCY DETECTION SYSTEM (EDS) TEST - THIS TEST WILL CHECKOUT THE EMERGENCY DETECTION SYSTEM WITHIN THE LAUNCH VEHICLE WITH THE EXCEPTION OF THE Q-BALL AND RF ABORT REQUEST CIRCUITRY.			
E. PULSE STRETCHER CALIBRATION TEST - THE CALIBRATION OF THE PULSE STRETCHER CIRCUITS WILL BE PERFORMED TO INSURE THAT THE RANGE SAFETY COMMAND RECEIVERS OF THE S-IB, AND S-IVB WILL ACCEPT THE FOLLOWING COMMANDS: ARM AND ENGINE CUTOFF, PROPELLANT DISPERSION, AND THE SAFETY COMMAND FOR THE S-IVB ONLY.			
F. REDUNDANT POWER SUPPLY TEST - THE ADEQUACY OF THE REDUNDANT POWER SUPPLIES WILL BE VERIFIED IN THIS TEST.			



APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET (CONTINUATION SHEET)		PAGE <u>3</u> OF <u>3</u>	
1. TEST TITLE		2. MSC TEST NUMBER	
SATURN: 1B LAUNCH VEHICLE ELECTRICAL SYSTEMS TEST		V-20101	
3. EFFECTIVITY		AS-206 AND SUSS	
ITEM CONTINUATION			
14. <u>COMPUTER PROC. IDENTIFICATION (CONTINUED)</u>			
IAED	IASS	IZRE	CAPU EAPS
IAFU	IZEA	IZSA	IT98
IAPX	IZEC	LA01	MT99
5. <u>TEST DESCRIPTION (CONTINUED)</u>			
<u>TEST REQUIREMENTS</u>			
(LV)	TM-011-001-2H	B.1.4.1.1, B.1.6.1.1.1, B.1.6.1.2.1, B.7.0.1, B.7.0.2	
(IU)	7921601	0.3.4.2.1.1, 0.3.4.2.3.2, 0.3.4.3.1 THRU 0.3.4.3.2.1,	
(S-IB)	60CD6050	3.5.1.1.3.1, 3.5.1.1.3.2, 3.5.1.1.4.1, 3.5.1.1.4.2	
		3.5.1.1.4.3, 3.5.3.2 (ALL)	
(S-IVB)	1886721	0.2.5.2.2.1, 0.2.5.2.2.2, 0.2.5.2.2.3, 0.2.5.2.2.4	
D	7/5/74	ASTP UPDATE	
C	2/1/73	UPDATE MSFC REQUIREMENTS	
		S/J.D.OWENS 2/2/73	
		S/FRANK BRYAN 2/4/73	

KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE	2. KSC TEST NUMBER V-20102	
SATURN IB PULL TEST	3. EFFECTIVITY AS-206 AND SUBS	
4. TEST OBJECTIVES		
TO VERIFY SV/PEDESTAL LATERAL STIFFNESS CONSTANTS AND DETERMINE THE NATURAL FREQUENCY OF THE FIRST BENDING MODE.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION		
THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
HAZARDOUS OPERATIONS: (A) WORK AT HEIGHT (B) CABLE UNDER TENSION		
THE TEST WILL BE PERFORMED IN THE VAB WITH THE S/V FULLY ASSEMBLED USING THE BP-30 CSM WITH STUB TOWER. HOLDDOWN ARMS WILL BE PRELOADED. ALL ACCESS DOORS WILL BE SECURED. ACCESS KITS MAY BE LEFT INSTALLED IN THE INTERSTAGES. S-IVB TUNNEL COVERS WILL NOT BE INSTALLED.		
THE STIFFNESS TEST WILL BE PERFORMED IN EACH OF TWO DIRECTIONS DIFFERING BY AN ANGLE OF 90 DEGREES, A WEST PULL AND A NORTH PULL. THE TEST WILL APPLY A TRANSVERSE PULL FORCE ON THE VEHICLE AT THE BP-30 STUB TOWER. THE PULL FORCE APPLIED SHALL BE INCREMENTALLY INCREASED FROM 0 TO A MAXIMUM, AND THEN DECREASED TO 0 AT THE SAME INCREMENTAL RATE FOR TWO COMPLETE CYCLES IN EACH DIRECTION.		
VEHICLE DEFLECTION WILL BE MEASURED BY ELECTRO-MECHANICAL AND/OR OPTICAL METHODS. OPTICAL DEFLECTION MEASUREMENTS WILL BE CONSIDERED VALID OVER MECHANICAL MEASUREMENTS. THE PULL FORCE WILL BE SUPPLIED BY A HYDRAULIC CYLINDER WITH A CABLE TRANSMITTING THE PULL FORCE TO THE VEHICLE.		
THE DYNAMIC TEST SHALL BE PERFORMED BY MANUALLY PUSHING THE VEHICLE IN THE PITCH PLANE TO A DEFLECTION AMPLITUDE OF 5 INCHES TO DETERMINE THE NATURAL FREQUENCY OF THE FIRST BENDING MODE OF THE VEHICLE/PEDESTAL COMBINATION. PHOTOGRAPHIC RECORDING WILL BE MADE OF THE AMPLITUDE AND FREQUENCY. THE DYNAMIC TEST WILL BE REPEATED 2 TIMES. DEFLECTION AMPLITUDE SHALL BE MEASURED AT VEHICLE STATION 2037.5.		
6. REV. 1 DATE	REASON	Contractor Approval
7/25/72	ASTP UPDATE	9/5/74
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
S/J. D. OWENS	5-8771	AUGUST 25, 1971
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
S/J. T. HUNTER	LV-MEC-2	9/17/71
S/FRANK BRYAN	LV-BIG	9/23/71

KSC FORM 23-336C 12-67

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE	2. KSC TEST NUMBER	
SATURN IB PULL TEST	V-20102	
3. LOCATION	14. COMPUTER PROC IDENTIFICATION	5. TEST TEST TIME
VAB		1 DAY
15. SUPPORT REQUIREMENTS		
RD26005 GROUND POWER S-IB STAGE POWER COUNTDOWN CLOCK GSE MEASURING (INS) DDAS DDAS TAPE RECORDING RCA 110A COMPUTERS FACILITY ECS (GAS) FACILITY COMM. (OIS) VMGE		
L/V ECS (GAS) C/F TM RECORDING TM RECORDS DEE-6 KSC PAD SAFETY FIRE FIGHTING MEDICAL PLATFORM OPERATIONS TIMING FILM CAMERAS OVERHEAD CRANE		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		
5. TEST DESCRIPTION (CONTINUED)		
TEST REQUIREMENTS:		
LV	TM-011-001-2H	(NONE)
IU	7921601	0.3.3.0(ONLY)
S-IB	60C06050	(NONE)
S-IVB	1B86721	(NONE)

KSC FORM 23-336C 12-67

KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE SATURN IB LAUNCH VEHICLE MALFUNCTION OVERALL TEST		2. KSC TEST NUMBER V-20103	
3. EFFECTIVITY AS-209 AND SUBS			
4. TEST OBJECTIVES TO VERIFY PROPER STAGE AND GSE RESPONSE TO MALFUNCTIONS INDUCED DURING THE AUTOMATIC FIRING SEQUENCE. TO VERIFY PROPER OPERATION OF THE ELECTRICAL/MECHANICAL VEHICLE AND GSE SYSTEMS DURING A NORMAL AUTOMATIC FIRING SEQUENCE AND FLIGHT SEQUENCE. TO PERFORM PLUS TIME TEST WITH VARIOUS COMMANDS BEING INITIATED VIA THE SPACECRAFT TO VERIFY PROPER OPERATION OF THE LV RANGE SAFETY COMMAND SYSTEM.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. HAZARDOUS OPERATIONS: A. HYDRAULIC SYSTEM PRESSURES ARE APPLIED WHILE SERVO ACTUATOR MECHANICAL LOCKS ARE REMOVED (S-IVB ENGINE MAY GIMBAL). B. HAZARDOUS SUBTASKS ARE PERFORMED DURING THE TEST. C. S-IVB ENGINE WILL GIMBAL DURING PLUS TIME (PART 9). D. HOLDOWN: ARMS WILL RELEASE THE LAUNCH VEHICLE WILL BE ERECTED ON THE ML, AND ALL STAGES MECHANICALLY AND ELECTRICALLY MATED. THE TEST WILL BE DIVIDED INTO NINE PARTS. THESE PARTS MAY BE IDENTIFIED AS FOLLOWS: PART 1: TCS POWER SUPPLY FAILURE, PREMATURE COMMIT & MANUAL CUTOFF. PART 2: PREPARATIONS COMPLETE & LAUNCH SEQUENCE START FAILURE. PART 3: S-IB VOLTAGE FAILURE CUTOFF. PART 4: SEQUENCE FAILURE CUTOFF. PART 5: POST IGNITION CUTOFFS PART 6: THRUST FAILURE CUTOFF PART 7: ANY ENGINE CUTOFF AFTER COMMIT PART 8: PROPELLANT SIM LOAD, SHUTDOWN PERTURBATIONS, LAUNCH FAILURE CUTOFF PART 9: SIMULATED FLIGHT TEST THE NINE PARTS CONSIST OF VARIOUS SIMULATED MALFUNCTIONS TO VERIFY PROPER OPERATION OF THE LAUNCH VEHICLE AND GROUND SUPPORT EQUIPMENT DURING ABBREVIATED COUNTDOWN, LIFTOFF AND (DURING PART 9 ONLY) FLIGHT SEQUENCE. PART 8 WILL INCLUDE A SIMULATED VEHICLE PROPELLANT LOAD & DRAIN. PART 9 WILL INCLUDE THE COMPLETE IALL & IATS GROUND COMPUTER PROGRAMS. CONTINUED ON PAGE 2			
F	6/29/73	ADDED NEW PART 7	J.D. Owens 4/1/73 S/F. BRYAN 2/12
E	3/22/73	DELETED PART 7, ADDED PART 8	J.D. Owens 4/1/73 S/F. BRYAN 2/12
C	2/12/73	GENERAL REVISION	2/13 2/15 S/J.D. OWENS S/F. BRYAN
C	11/28/72	ADD LV TEST REQUIREMENTS	11/28 11/29 S/J.D. OWENS S/F. BRYAN
B	10/19/72	TEST REQMTS, LOCATION, HAZARDOUS OPS	10/19 10/19 S/J.D. OWENS S/F. BRYAN
5. REV.	DATE	REASON	Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL	8. ORGANIZATION		9. DATE
S/J. D. OWENS	5-8771, BATC		FEB. 2, 1972
10. NASA FSC APPROVAL	11. ORGANIZATION		12. APPROVAL DATE
S/FRANK BRYAN	LV-ENG		FEB. 14, 1972

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE SATURN IB LAUNCH VEHICLE MALFUNCTION OVERALL TEST		2. KSC TEST NUMBER V-20103	
3. LOCATION PAD		4. COMPUTER PROC. IDENTIFICATION SEE ITEM 18	
5. SUPPORT REQUIREMENTS		6. EST. TEST TIME THREE DAYS	
GROUND SUPPORT S-IB STAGE POWER S-IVS STAGE POWER IU POWER BACKUP BATTERIES TIMING COUNTDOWN CLOCK LCC MEASURING (INS) LCC MEASURING (LVO) GSE MEASURING (INS) RD 26004		SD 26004 LCC DATA DISPLAY CIF DATA DISPLAY DDAS DDAS TAPE RECORDING DEE-6 110A COMPUTERS LV W-G ECS FACILITY ECS H.P. GAS CCF	
FACILITY COMMUNICATIONS (OIS) LV ECS LCC TM STATION (MONITORS) LCC TM RECORDING CIF TM RECORDING CIF COMPUTER CIF DATA TM RECORDER REAL-TIME CIF COMPUTER POST TEST CIF COMPUTER			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			
14. COMPUTER PROGRAMS (CONTINUED)			
CE10	FT04	FT37	IAAR
EAIC	FT05	FT42	IAEC
EAPF	FT06	FT43	IAFC
EAPS	FT10	FT45	IAHD
EASS	FT20	FT47	IALL
FE50	FT23	FT49	IAMC
FT81	FT27	FT55	IAPX
FT03	FT31	GE01	IARS
	FT33	GT16	IASP
IATC	IATS	LA01	LZTU
IZEA	IZEA	MT01	MT01
IZEC	IZEC	NT98	NT98
IZRE	IZRE	NT99	NT99
IZSA	IZSA	OPU	OPU
IZ33	IZ33	OATI	OATI
LAF2	LAF2		
LAPW	LAPW		
5. TEST DESCRIPTION (CONTINUED)			
TEST REQUIREMENTS			
(S-IB)	60C06050	3.2.5.3.6, 3.5.3.1.1, 3.5.3.1.2.1 THRU 3.5.3.1.2.9, 3.5.3.1.3, 3.5.3.1.4, 3.5.4.2, 3.7.2.7	
(IU)	7921601	0.3.5.2.2.3.2, 0.3.5.2.2.3.1	
(LV)	TM-011-001-2H	1.1.1.4.1, 1.5.1 THRU 1.5.2, 1.5.1, 2.0.1.1, 2.0.1.4, 7.0.1, 7.0.2	
H	7/5/74	ASTP UPDATE	
G	12/3/73	AMEND TEST REQUIREMENTS	



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE SATURN IB PROPELLANT NETWORKS/VEHICLE INTERFACE VERIFICATION		2. KSC TEST NUMBER V-20104	
3. EFFECTIVITY AS-206 AND SUBS			
4. TEST OBJECTIVES TO VERIFY E-D-TO-E-D PROPELLANT NETWORKS/VEHICLE INTERFACE SIGNALS.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  SIGNALS ORIGINATING IN THE VEHICLE OR IN THE ESE ARE INITIATED AT THE SIGNAL SOURCE OR SIMULATED AS CLOSE TO THE SIGNAL SOURCE AS POSSIBLE. RECEIPT OF SIGNALS IS CONFIRMED AT PROPELLANTS PTCR NETWORKS SIMULATORS LOCATED ON LUT ZERO LEVEL.  SIGNALS ORIGINATING IN PROPELLANTS NETWORKS LOGIC ARE SIMULATED AT THE PTCR NETWORKS SIMULATOR OR FIRING ROOM CONTROL PANELS. RECEIPT OF THESE SIGNALS IS CONFIRMED AT ESE CONTROL PANELS.  ALL CIRCUITS CROSSING THE ML & LCC PROPELLANT ESE/VEHICLE INTERFACES ARE TO BE VERIFIED FOR THE S-1B AND S-1V3 STAGES FOR RP-1, LOX, AND LH2 SYSTEMS.  THE LAUNCH VEHICLE WILL BE LOCATED IN THE VEHICLE ASSEMBLY BUILDING IN A MATED CONFIGURATION.  TEST REQUIREMENTS  NOTE			
C	2/5/74	ASTP UPDATE	J.D. Owens 1/5/74 4/26
B	12/15/73	ADD PD NUMBER	J.D. Owens 7/5/73 7/20
A	4/18/72	UPDATE TEST DESCRIPTION	W. K. Williams 4/14/72 4/14/72
6. REV. DATE		REASON	
7. CONTRACTOR APPROVAL J.D. Owens		8. ORGANIZATION 5-8571	
9. DATE Sept. 2, 1971		10. APPROVAL DATE 3/14/72	
11. ORGANIZATION LU-ENG			

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE SATURN IB PROPELLANT NETWORKS/VEHICLE INTERFACE VERIFICATION		2. KSC TEST NUMBER V-20104	
3. EFFECTIVITY AS-206 AND SUBS			
13. LOCATION VAB	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 8 HOURS	
16. SUPPORT REQUIREMENTS SID-20104-B RCA 110A COMPUTER LV POWER UP LSE POWER UP DEE-6 NETWORKS PTCR SIMULATOR PTCS-PTCR SIMULATOR			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE  SATURN IB LSE ELECTROMECHANICAL SYSTEMS TEST		2. KSC TEST NUMBER V-20105	
3. TEST OBJECTIVES  TO VERIFY PROPER OPERATION AND ISOLATION OF THE REDUNDANT LSE RETRACTION SYSTEMS.		3. EFFECTIVITY AS-206 AND SUBS	
5. TEST DESCRIPTION ON EQUIPMENT STATUS CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THE LAUNCH VEHICLE WILL BE ERECTED ON THE MOBILE LAUNCHER WITH ALL UMBILICAL CARRIER PLATES ATTACHED. SERVICE ARMS, SHORT CABLE MASTS AND S-IB PROPELLANT MASTS WILL BE IN A SAFED CONDITION TO PREVENT POSSIBLE UMBILICAL EJECTION OR RETRACTION. THE TEST WILL BE CONDUCTED BOTH IN THE VAB AND AT THE PAD WITH ALL PARTS BEING PERFORMED IN THE VAB AND AT THE PAD. SERVICE ARM CONTROL SWITCHES ON FINS 3 AND 7 WILL BE OPERATED IN PARTS I - V TO PROVIDE END-TO-END VERIFICATION OF THE TWO REDUNDANT LSE RETRACTION SYSTEMS.			
TEST REQUIREMENTS  NONE			
6. REV	DATE	REASON	Contractor Approval
C	9/5/74	ASTP UPDATE	J. D. Owens 9/5/74 J. Bryan 9/12/74
B	2/15/73	ADD PD NUMBER	J. D. Owens 2/15/73 J. Bryan 2/15/73
A	10/12/72	DELETE TCS TEST. REDUCE FROM 8 TO 5 PARTS. PERFORM ALL PARTS IN VAB & AT PAD.	J. D. Owens 10/16/72 J. Bryan 10/16/72
7. CONTRACTOR APPROVAL		8. ORGANIZATION	9. DATE
S/J. D. OWENS		5-8571	SEPT 24, 1971
10. NASA-KSC APPROVAL		11. ORGANIZATION	12. APPROVAL DATE
S/FRANK BRYAN		LV-ENG	SEPT 27, 1971

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE  SATURN IB LSE ELECTROMECHANICAL SYSTEMS TEST		2. KSC TEST NUMBER V-20105	
3. TEST OBJECTIVES  TO VERIFY PROPER OPERATION AND ISOLATION OF THE REDUNDANT LSE RETRACTION SYSTEMS.		3. EFFECTIVITY AS-206 AND SUBS	
4. LOCATION VAB & PAD B		4. COMPUTER PROC. IDENTIFICATION	
5. SUPPORT REQUIREMENTS RD 28100 LSE BACK-UP BATTERIES SERVICE ARM FIRING POWER SYSTEM DDAS RCA 110A COMPUTERS HP GAS FACILITY COMM. (OIS) DEE-6 S-IB ESE POWER LSE POWER			
6. OTHER APPLICABLE REFERENCE DOCUMENTATION			
7. ITEM CONTINUATION			

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE <b>SATURN IB SERVICE ARM OVERALL TEST</b>		2. KSC TEST NUMBER <b>V-20106</b>
3. EFFECTIVITY <b>AS-207 AND SUBS</b>		
4. TEST OBJECTIVES TO VERIFY COMPATIBILITY AND PROPER OPERATION OF ALL LAUNCH VEHICLE AND GSE SYSTEMS DURING A NORMAL AUTOMATIC FIRING SEQUENCE AND FLIGHT SEQUENCE WITH UMBILICAL EJECTION AND SERVICE ARM AND SHORT CABLE MAST RETRACTION.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  HAZARDOUS OPERATIONS: A. UMBILICALS EJECTED. B. SERVICE ARMS AND SCM'S RETRACTED.  THE LAUNCH VEHICLE WILL BE ERECTED ON THE MOBILE LAUNCHER IN THE VAB. ALL STAGES WILL BE MECHANICALLY AND ELECTRICALLY MATED. THE LAUNCH VEHICLE WILL BE PREPARED AND FUNCTIONALLY CHECKED IN AN ABBREVIATED COUNTDOWN DURING WHICH THE TM, RF, RSCR, GSC, POWER AND EDS SYSTEMS WILL BE VERIFIED. A PROPELLANT DISPERSION TEST WILL BE RUN. THE COUNT WILL PROCEED NORMALLY THROUGH "PREPARATIONS COMPLETE" AND INITIATION OF THE FIRING COMMAND. THE TERMINAL COUNT SEQUENCE WILL PROCEED THROUGH COMMIT. LIFTOFF WILL BE SIMULATED BY SERVICE ARM CONTROL SWITCH OPERATION TO COMMAND UMBILICAL EJECTION AND INFLIGHT SERVICE ARM RETRACTION. LV ECS WILL BE TERMINATED AT UMBILICAL DISCONNECT. SA #9 WILL NOT BE RETRACTED. EXCEPT FOR PLUGS OUT OAT CONFIGURATION, THE LAUNCH VEHICLE WILL BE ELECTRICALLY AND MECHANICALLY SEPARATED FROM THE GSE AFTER LIFTOFF TO SIMULATE FLIGHT CONDITIONS AS CLOSELY AS POSSIBLE. THE FLIGHT COMPUTER WILL PROGRAM THE LAUNCH VEHICLE THROUGH AN ABBREVIATED FLIGHT SEQUENCE THROUGH TIME BASE 5. THE TEST WILL BE TERMINATED AFTER RANGE SAFETY COMMAND FUNCTIONS HAVE BEEN GIVEN TO THE POWERED STAGES.		
F	9/5/74	ASTP UPDATE
E	12/3/73	UPDATE KSC REQUIREMENTS
D	3/2/73	PROPELLANT DISPERSION TEST ADDED
C	1/2/73	DELETE ORDNANCE, TIME BASE 5 WAS 4, CHANGE EFFECTIVITY
B	10/27/72	REVISE HAZ, ADD REQMS & COMP PROG
A	5/18/72	ADD PROGRAM AND SUPPORT REQUIREMENTS
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
S/J. D. OWENS	5-8771	FEB. 2, 1972
10. NASA/KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
S/FRAK BRYAN	LV-ENG	FEB. 9, 1972

APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>2</u> OF <u>2</u>				
1. TEST TITLE <b>SATURN IB SERVICE ARM OVERALL TEST</b>		2. KSC TEST NUMBER <b>V-20106</b>				
3. LOCATION <b>VAB (SEE ITEM 18)</b>		4. EFFECTIVITY <b>AS-207 AND SUBS</b>				
5. SUPPORT REQUIREMENTS		6. HOURS <b>8 HOURS</b>				
GROUND POWER S-IB STAGE POWER S-IVB STAGE POWER IU POWER BACKUP BATTERIES COUNTDOWN CLOCK OAT EQUIPMENT LSE POWER LCC MEASURING (LVO) GSE MEASURING (LVO) DDAS		DDAS TAPE RECORDING RCA 110A COMPUTERS LV W-G ECS LV ECS (GAS) LOCAL COMMAND CARRIER (DRCS SYSTEM & IU) LCC TM RECORDING LCC TM STATION MONITOR IU RF STATION CIF REAL TIME SUPPORT RD 25004				
7. OTHER APPLICABLE REFERENCE DOCUMENTATION						
10. ITEM CONTINUATION						
5. TEST DESCRIPTION (CONTINUED)						
TEST REQUIREMENTS:						
LV	TM-011-001-24	1.1.1.4, 1.1.1.4.1, 1.5.1 THRU 1.5.2, 1.6.1, 1.9.1.1, 2.0.1.1, 2.0.1.6, 5.0.1(ALL), 7.0.1, 7.0.2				
S-IB	60C06050	3.7.1.1.1, 3.7.1.1.2.1, 3.7.1.1.2.2, 3.7.1.1.2.3, 3.7.1.1.2.4, 3.7.1.1.2.5, 3.7.1.1.3, 3.7.1.1.4				
S-IVB	1B86721	NONE				
IU	7921601	0.3.3.2.3, 0.3.4.2.1 THRU 0.3.4.2.5, 0.3.5.2.2.3.2, 0.3.5.2.2.3.1, 0.3.4.2.0.1				
14. COMPUTER PROC. IDENTIFICATION (CONTINUED)						
CE10	FTB1	FT47	IAAR	IARS	IZRE	LZTU
EA1C	FT04	FT49	IAED	IASL	IZSA	NT98
EAPF	FT06	FT55	IAFC	IASP	IZ33	NT99
EAPS	FT08	FU01	IALL	IATC	LAPW	OAT1
EASS	FT10	GE01	IAMC	IATS	LAF2	OPU
FE50	FT20	GT16	IAPX	IZEA	LA01	Z796

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE SATURN IB LOX & RP-1 DELTA P SENSE LINES QUALIFICATION TEST		2. KSC TEST NUMBER V-20107	
3. EFFECTIVITY AS-206 AND SUBS			
4. TEST OBJECTIVES TO VERIFY SATISFACTORY OPERATION AND LEAK TIGHTNESS OF THE S-IB DELTA P MEASURING SYSTEM GSE.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. HAZARDS CONSIST OF PERSONNEL WORKING AT HEIGHTS. THIS TEST IS PERFORMED IN NINE PARTS: PARTS 1, 2, 3, 5 & 6 WILL BE PERFORMED IN THE VAB. PARTS 4, 5, 7, 8 & 9 WILL BE PERFORMED AT THE PAD  1. RP-1 DELTA P SYSTEM CLEANLINESS - A CONTAMINATION ANALYSIS IS PERFORMED TO VERIFY THE PARTICLE COUNT AND MOISTURE LEVEL MEETS THE REQUIREMENTS OF KSC-C-123, LEVEL II.  2. HE PURGE PRESSURE SWITCH ACTUATION - A FUNCTIONAL VERIFICATION IS PERFORMED ON THE PRESSURE SWITCH.  3. HE FLOW RATE VERIFICATION - THE PROPER FLOW RATE IS VERIFIED IN THE RP-1 LEVEL SENSING, HIGH PRESSURE LINE.  4. RP-1 DELTA P SYSTEM LEAK AND FUNCTIONAL TEST - A LEAK CHECK IS PERFORMED ON THE LINES AND SOLENOIDS.  CONFIGURATION: 1. RP-1 PTCs TRANSDUCERS DISCONNECTED FROM SYSTEM; 2. RP-1 SENSING LINES CONNECTED TO PTCs TRANSDUCER RACK, VP-9, AND S/A 1A. 3. S-IB VEHICLE ERECTED. (CONTINUED PAGE 2 ITEM 18)			
E	9/5/74	ADP UPDATE	J. Owens 9/5/74 F. Bryan 4/22
D	4/6/73	ADD TEST 8 & 9 (SENSE LINE PURGE & POST RP-1 LOADING TEST)	J. Owens 4/6/73 F. Bryan 4/6
C	2/27/73	RP-1 SENSE LINE PRESS DECAY TEST ADDED LOX TEST EXPANDED TO INCLUDE SCM 4	J. Owens 2/27/73 F. Bryan 3/8
B	10/31/72	INCLUDE LOX DELTA P SYSTEM	J. Owens 10/31/72 F. Bryan 11/12
A	9/28/72	CHANGE HAZARDS	9/28/72 S/J.D. OWENS S/F. BRYAN
6. REV.	DATE	REASON	Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL S/J. D. OWENS		8. ORGANIZATION S-8771 THE BOEING COMPANY	9. DATE MAY 10, 1972
10. NASA/KSC APPROVAL S/FRANK BRYAN		11. ORGANIZATION LV-ENG	12. APPROVAL DATE MAY 15, 1972

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET 21		PAGE 2 OF 2	
1. TEST TITLE SATURN IB LOX & RP-1 DELTA P SENSE LINES QUALIFICATION TEST		2. KSC TEST NUMBER V-20107	
3. EFFECTIVITY AS-206 AND SUBS			
13. LOCATION ML-1/VAB/PAD	14. COMPUTER PROGRAM IDENTIFICATION N/A	15. TEST DURATION 24 HOURS	
16. SUPPORT REQUIREMENTS BOEING, PNEUMATICS (6000 PSI GN2 AND HE TOWER SUPPLY) BOEING, SWING ARMS (S/A-1A ONLY) BOEING, PTCs & PROPELLANT POWER BENDIX, CONTAMINATION ANALYSIS FACILITY COMMUNICATIONS (OIS) CCSD, LUT NETWORKS CCSD, STAGE FEC, MEASUREMENTS			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 65ICD9890			
18. ITEM CONTINUATION <u>ITEM 5 CONTINUED</u>  5. SET-UP FOR LOX DELTA P SENSE LINES PRESSURIZATION - A PROCEDURE IS OUTLINED FOR PRESSURIZING LOX DELTA P LINES.  6. LOX DELTA P SYSTEM CLEANLINESS - A CONTAMINATION ANALYSIS IS PERFORMED TO VERIFY THE PARTICLE COUNT AND MOISTURE LEVEL MEETS THE REQUIREMENTS OF KSC-C-123, LEVEL II.  7. LOX DELTA P SYSTEM LEAK TEST - A LEAK TEST IS PERFORMED ON LOX DELTA P LINES.  8. RP-1 HIGH & LOW PRESS SENSE LINE PURGES FOR RP-1 LOADING - PURGE RP-1 SENSE LINES WITH HE.  9. POST TEST RP-1 LOADING SENSE LINE TEST - TEST FOR GAS IN HIGH PRESSURE SENSE LINES, PERFORM PRESSURE DECAY TEST.  <u>TEST REQUIREMENTS</u> NONE			



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>																														
1. TEST TITLE  VAB MOBILE LAUNCHER 1 LOX AND FUEL LEAK CHECKS		2. KSC TEST NUMBER V-20108 3. EFFECTIVITY AS-206 AND SUBS																														
4. TEST OBJECTIVES  TO VERIFY COMPLIANCE WITH LEAK REQUIREMENTS FOR SERVICE ARM AND FILL MAST PORTIONS OF THE LOX AND FUEL (RP-1 & LH2) FILL SYSTEMS, VEHICLE VENT SYSTEMS, AND LH2 HEAT EXCHANGER.																																
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  HAZARDS INCLUDE: A. PERSONNEL WORKING AT HEIGHTS.  VEHICLE LEAK CHECKS WILL NOT BE PERFORMED. PRESSURIZATION WILL BE DONE USING HELIUM AND G12. LEAK DETECTION WILL BE ACCOMPLISHED USING LEAK CHECK SOLUTION, USON AND MASS SPECTROMETER. RETEST WILL BE PERFORMED PER THIS PROCEDURE.  S-IVB TURBINE START BOTTLE VENT LINE AND PUMP SEAL BLEED LINE WILL BE DISCONNECTED AND PLUGGED AT VEHICLE AND FACILITY GH2 VENT SYSTEM INTERFACES. VEHICLE GH2 VENT LINE WILL BE DISCONNECTED FROM THE S-IVB AND BLIND FLANGED, AND A MANUAL VALVE INSTALLED AT LUT DISCONNECT. SKID VALVES WILL BE CLOSED AND DEBRIS VALVES WILL BE CLOSED OR LINES CAPPED.  LEAK CHECKS WILL BE PERFORMED AS FOLLOWS: THE S-1B LOX AND RP-1 FILL AND DRAIN LINES FROM THE MAST CUT-OFF VALVES TO THE VEHICLE FILL AND DRAIN VALVES WILL BE PRESSURIZED WITH HELIUM (LOX) AND G12 (RP-1) USING S-1B STAGE PRESSURE. PRESSURIZE LOX AND LH2 FILL LINES ACROSS S-IVB AFT SERVICE ARM (S/A 6) USING "K" BOTTLES AND CHECK FOR LEAKS; PRESSURIZE VEHICLE GH2 VENT LINE ACROSS S-IVB FORWARD SERVICE ARM (S/A 7) AND DOWN TO LUT DISCONNECT USING 700 PSIG HELIUM SUPPLY AND CHECK FOR LEAKS; AND PRESSURIZE START BOTTLE VENT LINE AND PUMP SEAL BLEED LINE USING GHE "K" BOTTLES AND CHECK FOR PRESSURE DECAY. PRESSURIZE LH2 HEAT EXCHANGER VENT & CHECK. UPON COMPLETING CHECKS, EACH SYSTEM WILL BE VENTED AND RETURNED TO STANDBY CONFIGURATION.																																
TEST REQUIREMENTS:																																
<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>REASON</th> <th>Contractor Approval</th> <th>KSC Approval</th> </tr> </thead> <tbody> <tr> <td>F</td> <td>9/5/76</td> <td>ASTP DATE</td> <td></td> <td></td> </tr> <tr> <td>D</td> <td>1-15/73</td> <td>ADD LH2 HEAT EXCHANGER VENT</td> <td></td> <td></td> </tr> <tr> <td>C</td> <td>11/22/72</td> <td>CHANGE S-1B LOX PRESSURIZATION TO GHE</td> <td></td> <td></td> </tr> <tr> <td>E</td> <td>9/11/72</td> <td>DELETE PRESSURIZED OVER 50% OF BURST</td> <td></td> <td></td> </tr> <tr> <td>A</td> <td>7/12/72</td> <td>CHANGE PRESSURIZATION METHOD</td> <td></td> <td></td> </tr> </tbody> </table>			REV	DATE	REASON	Contractor Approval	KSC Approval	F	9/5/76	ASTP DATE			D	1-15/73	ADD LH2 HEAT EXCHANGER VENT			C	11/22/72	CHANGE S-1B LOX PRESSURIZATION TO GHE			E	9/11/72	DELETE PRESSURIZED OVER 50% OF BURST			A	7/12/72	CHANGE PRESSURIZATION METHOD		
REV	DATE	REASON	Contractor Approval	KSC Approval																												
F	9/5/76	ASTP DATE																														
D	1-15/73	ADD LH2 HEAT EXCHANGER VENT																														
C	11/22/72	CHANGE S-1B LOX PRESSURIZATION TO GHE																														
E	9/11/72	DELETE PRESSURIZED OVER 50% OF BURST																														
A	7/12/72	CHANGE PRESSURIZATION METHOD																														
6. REV DATE		REASON	7. CONTRACTOR APPROVAL																													
S/J. D. OWENS		5-8771	NOV. 18, 1971																													
10. NASA/KSC APPROVAL		11. ORGANIZATION	12. APPROVAL DATE																													
S/FRANK BRYAN		LV-ENG	12/6/71																													

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APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE  VAB MOBILE LAUNCHER 1 LOX AND LH2 FUEL LEAK CHECKS		2. KSC TEST NUMBER V-20108 3. EFFECTIVITY AS-206 AND SUBS
13. LOCATION VAB-ML 1	14. COMPUTER PROGRAM IDENTIFICATION N/A	15. EST. TEST TIME 40 HOURS
16. SUPPORT REQUIREMENTS  MASS SPECTROMETER W/OPERATOR KSC SAFETY OIS RD 28300		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		

KSC FORM 23-338C 17, 67







KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE SATURN IB LAUNCH VEHICLE CONTROL PROCEDURE FOR RETURN OF S/V TO THE VAB		2. KSC TEST NUMBER V-20110 3. EFFECTIVITY AS-206 AND SUBS
4. TEST OBJECTIVES THE OBJECTIVE OF THIS PROCEDURE IS TO PRESENT OPERATIONS REQUIRED TO ACHIEVE THE FOLLOWING TASKS: 1) PREPARE THE LAUNCH VEHICLE FOR RETURN OF THE S/V FROM THE PAD TO THE VAB, 2) RETRACTION OF THE MOBILE SERVICE STRUCTURE (MSS) FROM THE LUT/VEHICLE, 3) PREPARE LAUNCH VEHICLE FOR TEMPORARY STAY IN THE VAB.		
5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. HAZARDS: A. CRAWLER HIGH PRESSURE HYDRAULICS & CRAWLER OPERATION B. PLATFORM RETRACTION & EXTENSION C. HIGH WIND HAZARDS D. WORK AT HEIGHTS E. ELECTRICAL STORM HAZARDS THE LAUNCH VEHICLE CONTROL PROCEDURE FOR RETURN OF THE SV TO THE VAB IS IN ACCORDANCE WITH THE OVERALL GUIDELINES OF THE DLO TRANSFER PLAN. THIS PROCEDURE CONSISTS OF PRE-TRANSFER CONDITIONS AND OPERATING STEPS. THE PRE-TRANSFER CONDITION SECTION OF THIS PROCEDURE PROVIDES A CHECK LIST OF PRE-MOVE CONDITIONS AND REQUIREMENTS FOR THE LAUNCH VEHICLE AND GSE. PART I OF THE OPERATING STEPS STARTS WITH PREPARATIONS FOR THE TRANSFER AND ENDS WITH THE LAUNCH VEHICLE TRANSFER TO THE VAB. PART II OF THE OPERATING STEPS STARTS WITH ARRIVAL OF LAUNCH VEHICLE AT THE VAB AND ENDS WITH THE COMPLETION OF SECURING OPERATIONS AND CONNECTION OF ECS. TEST REQUIREMENTS NONE		
8. DATE 9/1/74	REASON ASTP UPDATE	9. DATE 9/1/74
A	11/14/72 CHANGE PART I, ADD RD NO.	11/15/72
6. REV. DATE	REASON	Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL J. B. Owens	8. ORGANIZATION 5-8571	9. DATE August 31, 1971
10. NASA APPROVAL Frank Dwyer	11. ORGANIZATION LV-ENG	12. APPROVAL DATE 9/13/71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE SATURN IB LAUNCH VEHICLE CONTROL PROCEDURE FOR RETURN OF S/V TO THE VAB		2. KSC TEST NUMBER V-20110 3. EFFECTIVITY AS-206 AND SUBS
13. LOCATION LC-39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 22 HOURS
16. SUPPORT REQUIREMENTS KSC PAD SAFETY SECURITY POLICE FIRE FIGHTING MEDICAL LCC MEASURING (LVO) LCC MEASURING (INS) GSE MEASURING (LVO) GSE MEASURING (INS) SERVICE STRUCTURE MEASURING SPACE VEHICLE ECS FACILITY TV (OTV) FACILITY COMMUNICATIONS (OIS) SEARCH LIGHTS WEATHER FORECAST RD-25003		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		



KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE SATURN IB VERIFICATION TEST AFTER LIGHTNING STRIKE		2. KSC TEST NUMBER V-20111
3. EFFECTIVITY AS-206 AND SUBS		
4. TEST OBJECTIVES TO VERIFY OPERATION OF VULNERABLE COMPONENTS, CHECK ELECTRONIC SYSTEMS, AND ESTABLISH OVERALL SYSTEM CONFIDENCE AFTER A LIGHTNING STRIKE.		
5. TEST DESCRIPTION (EQUIPMENT STATUS CONFIGURATION) THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. HAZARDOUS OPERATIONS: A. HIGH PRESSURE GASES B. REMOVAL OF ORDNANCE INITIATORS AND DETONATORS AFTER CONFIRMATION OF A LIGHTNING STRIKE ON THE VEHICLE AT THE PAD, APPROPRIATE PARTS OF THIS TEST WILL BE RUN. PART I IS A CHECK OF THE MOST VULNERABLE COMPONENTS. PART II IS A MORE COMPREHENSIVE CHECK OF THE ELECTRONICS SYSTEMS. PART III WILL ESTABLISH OVERALL SYSTEM CONFIDENCE AFTER A DATA ANOMALY OR A VISUAL INSPECTION HAS REVEALED DAMAGE. PART I - WILL BE PERFORMED UPON CONFIRMATION OF A LIGHTNING STRIKE, WHEN DATA IS AVAILABLE, TO ANOMALIES IN DATA WERE OBSERVED AND A VISUAL INSPECTION REVEALED NO DAMAGE. PART IA - WILL BE PERFORMED PRIOR TO T-9 HOURS IN CDDT AND LCD. PART IB - WILL BE PERFORMED AFTER T-9 HOURS IN CDDT AND LCD. PART II - TO BE RUN IN UNKNOWN SITUATIONS. DATA IS NOT AVAILABLE TO CONFIRM SYSTEMS STATUS. PART III - WILL BE RUN ONLY IF SUFFICIENT DATA DISCREPANCIES OR PHYSICAL DAMAGE WARRANTS SUCH ACTION. PORTIONS OF THIS PART WHICH ARE TO BE RUN WILL BE DEPENDENT ON VEHICLE CONFIGURATION. AFTER REMOVAL OF ORDNANCE INITIATORS AND DETONATORS PART II WILL BE RUN TOGETHER WITH ANY STAGE PECULIAR TESTS NOT RUN IN PART II WHICH MAY BE REQUIRED TO ESTABLISH OVERALL SYSTEM CONFIDENCE.		
C	9/15/72	ASTP UPDATE
B	4/23/73	REVISES IVAR LIST & TEST REQUIREMENTS
A	12/8/72	ADDS IVAR LIST; ADDS TEST REQUIREMENTS; DEFINES PARTS IA & IB; UPDATES PART III
6. REV. DATE		REASON
7. CONTRACTOR APPROVAL S/J. D. OWENS		8. ORGANIZATION BATC, 5-8771
9. DATE 9/20/71		10. NASA KSC APPROVAL S/F. ERYAN
11. ORGANIZATION LV-ENG		12. APPROVAL DATE 2/3/72

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE SATURN IB VERIFICATION TEST AFTER LIGHTNING STRIKE		2. KSC TEST NUMBER V-20111
3. EFFECTIVITY AS-206 AND SUBS		
13. LOCATION LC-39	14. COMPUTER PROC. IDENTIFICATION SEE LIST IN BLOCK 18	15. EST. TEST TIME VARIABLE
16. SUPPORT REQUIREMENTS FACILITY COMMUNICATIONS (OIS) FACILITY TV (OTV) ALL STAGE POWER DEE-6 DDAS RCA-110A COMPUTERS FACILITY ECS COUNTCLOCK BACKUP BATTERIES LCC MEASURING (LVO) GSE MEASURING (LVO)		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION COMPUTER PROGRAM IDENTIFICATIONS		
CTB2	FT06	FT25
FE50	FT08	FT31
FT03	FT10	FT35
FT04	FT20	FT37
FT05	FT23	FT43
LA01	MT01	QALR
LAF2	QALR	QATO
LAPW	OALS	IASP
LAM2	OAPU	IATC
LASH	QARI	IASL
EAIC	EALR	EAPS
EAPU	EASS	
TEST REQUIREMENTS: (LV) TM-011-001-2H 13.0.1 THRU 13.3.1.4.3		



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
SATURN IB PAD MOBILE LAUNCHER LOX AND FUEL LEAK CHECKS		V-20112	
		3. EFFECTIVITY	
		AS-206 AND SUBS	
4. TEST OBJECTIVES			
TO VERIFY COMPLIANCE WITH LEAK REQUIREMENTS FOR THE MOBILE LAUNCHER LOX/FUEL FILL AND THE FACILITY VENT SYSTEMS AND THE LH2 TRANSFER AND VEHICLE VENT SYSTEM.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION			
THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
HAZARDS INCLUDE:			
A. PERSONNEL WORKING AT HEIGHTS			
B. INERT ATMOSPHERES			
S-IVB PROPELLANT AND VENT LINES WILL BE PRESSURIZED UP TO THE VEHICLE INTERFACE. PRESSURIZATION WILL BE DONE USING GHE FROM "K" BOTTLES AND PURGE SUPPLIES. LEAK DETECTION WILL BE PERFORMED WITH LEAK CHECK SOLUTION, USON, MASS SPECTROMETER AND PRESSURE DECAY OBSERVATION. THE ML SYSTEMS WILL BE LEAK CHECKED FROM THE VEHICLE INTERFACES TO THE GROUND FACILITY INTERFACES.			
S-IB LOX AND RP-1 FILL LINES WILL BE PRESSURIZED USING HELIUM AND GN2 RESPECTIVELY FROM S-IB STAGE TANKS UP TO THE LOX DEBRIS VALVE AND RP-1 MAST CUTOFF VALVE. LEAK DETECTION WILL BE PERFORMED WITH LEAK CHECK SOLUTION AND MASS SPECTROMETER			
DETECTED LEAKS WILL BE REPAIRED AND THEN RETESTED PER THIS PROCEDURE.			
THE S-IVB TURBINE START BOTTLE AND PUMP SEAL BLEED VENT LINES WILL NOT BE CONNECTED TO THE VEHICLE, THE S-IVB GH2 VENT LINE WILL REMAIN CONNECTED TO THE VEHICLE WITH THE VENT VALVE CLOSED. S-IVB SKID VALVES AND THE FILL & DRAIN VALVES WILL BE CLOSED AND THE DEBRIS VALVES OPEN.			
THE S-IB LOX FILL & DRAIN VALVE WILL BE CLOSED, AFTER PRESSURIZATION, AND THE LOX DEBRIS VALVE WILL BE CLOSED. THE S-IB RP-1 FILL & DRAIN VALVE WILL BE OPEN AND THE RP-1 MAST CUTOFF VALVE CLOSED.			
6. REV.	DATE	REASON	9. DATE
E	7/5/74	ASTP UPDATE	7/5/74
D	7/5/73	ADD TURBINE START BOTTLE & PUMP SEAL BLEED LINES	7/5/73
C	12/15/72	ADD S-IB RP-1 MAST LEAK CHECKS	12/15/72
		CHANGE TITLE	
B	9/12/72	CHANGE S-IVB REQUIREMENTS, ADD RD NUMBER	9/12/72
7. CONTRACTOR APPROVAL		8. ORGANIZATION	
S/J. D. OWENS		5-8771	
10. NASA KSC APPROVAL		11. ORGANIZATION	
S/FRANK BRYAN		LV-ENG	
		12. APPROVAL DATE	
		9/28/71	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
SATURN IB PAD MOBILE LAUNCHER LOX AND FUEL LEAK CHECKS		V-20112	
		3. EFFECTIVITY	
		AS-206 AND SUBS	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME	
PAD B	N/A	40 HOURS	
16. SUPPORT REQUIREMENTS			
KSC SAFETY MASS SPECTROMETER/OPERATOR F&E MEASUREMENTS OIS LUT PNEUMATICS GROUND PNEUMATICS LCC POWER RD 28301			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			
5. TEST DESCRIPTION (CONTINUED)			
LEAK CHECKS WILL BE PERFORMED AS FOLLOWS:			
S-IVB LH2 HEAT EXCHANGER VENT LINE			
S-IB LOX FILL LINE			
S-IB RP-1 FILL LINE			
S-IVB LH2 SKID AND S/A 6 LH2 & LOX FILL LINES			
ML LH2 TRANSFER LINES			
S-IVB LH2 SKID VALVE SEATS			
S/A 7 GH2 VEHICLE VENT LINE			
S-IV TURBINE START BOTTLE & PUMP SEAL BLEED LINES			
UPON COMPLETION OF THE LEAK CHECKS, ALL SYSTEMS WILL BE VENTED AND CONFIGURED TO STANDBY CONFIGURATION.			
TEST REQUIREMENTS			
(LV)	TM-011-001-2H	NONE	
(S-IB)	60C06050	NONE	
(S-IVB)	1B86721	0.2.4.4 REQ, 2.1, 2.2	
		0.2.4.6 REQ, 1.6.1, 1.6.2, 2.1, 2.2	
(IU)	7921601	NONE	



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE SATURN IB SPECIAL INFLIGHT LIGHTNING TEST		2. KSC TEST NUMBER V-20113	
		3. EFFECTIVITY AS-210	
4. TEST OBJECTIVES TO SUBJECT THE SATURN IB LAUNCH VEHICLE TO A SERIES OF SIMULATED LIGHTNING STRIKES TO DETERMINE THE SAFETY MARGINS INHERENT IN THE DESIGN OF CRITICAL ELECTRIC/ELECTRONIC CIRCUITS.			
5. TEST DESCRIPTION IN EQUIPMENT STATUS CONFIRMATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  HAZARDOUS OPERATIONS:  A. UMBILICALS EJECTED   THE LAUNCH VEHICLE WILL BE ERECTED ON THE MOBILE LAUNCHER IN THE VAB. ALL STAGES WILL BE MECHANICALLY AND ELECTRICALLY MATED. THE LAUNCH VEHICLE WILL BE PREPARED AND FUNCTIONALLY CHECKED IN AN ABBREVIATED COUNTDOWN DURING WHICH THE TM, RF, RSCR, G&C, POWER AND EDS SYSTEMS WILL BE VERIFIED. A PROPELLANT DISPERSION TEST WILL BE RUN. THE COUNT WILL PROCEED NORMALLY THROUGH "PREPARATIONS COMPLETE" AND INITIATION OF THE FIRING COMMAND. THE TERMINAL COUNT SEQUENCE WILL PROCEED THROUGH COMMIT. LIFTOFF WILL BE SIMULATED BY SERVICE ARM CONTROL SWITCH OPERATION TO COMMAND UMBILICAL EJECTION AND WITHDRAWAL. LV ECS WILL BE TERMINATED AT UMBILICAL DISCONNECT. SERVICE ARMS 1A, 6, 7 & 8 WILL NOT BE RETRACTED. SERVICE ARM 9 WILL BE RETRACTED A MINIMUM OF ONE (1) FOOT. EXCEPT FOR PLUGS OUT CONFIGURATION, THE LAUNCH VEHICLE WILL BE ELECTRICALLY AND MECHANICALLY SEPARATED FROM THE GSE AFTER LIFTOFF TO SIMULATE FLIGHT CONDITIONS AS CLOSELY AS POSSIBLE. THE FLIGHT COMPUTER WILL PROGRAM THE LAUNCH VEHICLE THROUGH AN ABBREVIATED FLIGHT SEQUENCE THROUGH TIME BASE 1. THE TEST WILL BE TERMINATED AFTER THE SIMULATED LIGHTNING STRIKE AND THE LAUNCH VEHICLE WILL BE POWERED DOWN BY DCS AND THE SPECIAL FLIGHT PROGRAM.			
TEST REQUIREMENTS: NONE			
6. REV. DATE ASTP UPDATE		7. DATE 9/11/74	
8. ORGANIZATION W-4850		9. DATE June 26, 1974	
10. NASA VS. APPROVAL Frank S. Egan		11. ORGANIZATION LV-ENG	
		12. APPROVAL DATE 6/28/74	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE SATURN IB SPECIAL INFLIGHT LIGHTNING TEST		2. KSC TEST NUMBER V-20113	
		3. EFFECTIVITY AS-210	
13. LOCATION VAB	14. COMPUTER PROC. IDENTIFICATION IALL, IATS	15. EST. TEST TIME 10 DAYS	
16. SUPPORT REQUIREMENTS <div style="display: flex; justify-content: space-between;"> <div> GROUND POWER S-IB STAGE POWER S-IVB STAGE POWER IU POWER FLIGHT BATTERIES BACKUP BATTERIES COUNTDOWN CLOCK OAT EQUIPMENT LSE POWER LCC MEASURING (LVO) GSE MEASURING (LVO) DDAS </div> <div> DDAS TAPE RECORDING RCA 110A COMPUTERS LV W-G ECS LV ECS (GAS) LOCAL COMMAND CARRIER (DRSCS &amp; IU) CIF IU RF STATION </div> </div>			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE SATURN IB LAUNCH VEHICLE PROPELLANT SIMULATED LOADING		2. KSC TEST NUMBER V-20114
		3. EFFECTIVITY AS-207 AND SUSS
4. TEST OBJECTIVES TO VERIFY THAT THE PROPELLANT SYSTEM WILL PROPERLY CONTROL THE AUTOMATIC LOADING AND DRAIN OF A SATURN IB VEHICLE.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THE PROPELLANT SYSTEMS WILL BE OPERATED IN FILL, REPLENISH, LIFTOFF, AND DRAIN MODES FOR THE LV WITHOUT ACTUALLY TRANSFERRING LIQUID PROPELLANTS.  THE SIMULATED LOADING OPERATION WILL BE RUN ONLY DURING MALFUNCTION OAT AND FRT.  THE PTCs WILL BE UTILIZED TO PROVIDE SIMULATED LIQUID LEVEL INDICATIONS FOR EACH STAGE.  THE LAUNCH VEHICLE WILL BE LOCATED ON THE PAD AND ELECTRICALLY MATED.  <u>TEST REQUIREMENTS:</u>  LV TM-011-001-2H NONE S-IB 6DC66050 3.5.2.2, 3.5.2.4 S-IVB 1586721 NONE IU 7921601 NONE		
C	4/5/74	ASTP UPDATE
E	4-9-73	DELETE TERM COUNT SEQ'S & CUTOFFS FOR AS-207
A	11-2-72	CHANGE CUTOFFS AND TEST REQUIREMENTS
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL	ORGANIZATION	8. DATE
<i>J. T. Owens</i>	5-8571	Sept 2, 1971
9. NASA/KSC APPROVAL	ORGANIZATION	10. APPROVAL DATE
<i>Frank L. ...</i>	LV-ENG	3/14/72

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE SATURN IB LAUNCH VEHICLE PROPELLANT SIMULATED LOADING		2. KSC TEST NUMBER V-20114
		3. EFFECTIVITY AS-207 AND SUSS
12. LOCATION LC-39 PAD B	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 7 HOURS
16. SUPPORT REQUIREMENTS  RCA 110A COMPUTER LV POWER UP DTS DEE-3 PROPELLANT DC POWER PTCS LSE POWER UP  RD-26031		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
SATURN IB LAUNCH VEHICLE OPERATIONS FOR FACILITY POWER OUT TEST		V-20115	
3. EFFECTIVITY		AS-206 AND SUBS	
4. TEST OBJECTIVES			
THIS TEST WILL VERIFY THE CAPABILITY TO RESUME COUNT OR TO DRAIN CRYOGENIC PROPELLANTS FROM THE LAUNCH VEHICLE AND OTHERWISE SAFE AND SECURE THE LAUNCH VEHICLE AND GSE IN THE EVENT OF LOSS OF COMMERCIAL POWER TO LAUNCH COMPLEX 39.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION			
THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
HAZARDOUS OPERATIONS:			
(A) THE PL AND PTCR WILL BE PRESSURIZED.			
(B) LIQUID NITROGEN WILL BE HANDLED IN THE HGD SYSTEM.			
THE TEST WILL BE CONDUCTED WITH THE SPACE VEHICLE AT THE PAD. ALL SPACE VEHICLE AND SUPPORT SYSTEMS ARE REQUIRED TO BE IN A SIMULATED T-2 HOUR LAUNCH COUNTDOWN CONFIGURATION AS CLOSELY AS POSSIBLE. THE LV PROPELLANT SIMULATED LOADING TEST, V-20114, WILL BE RUN UNTIL THE REPLENISH MODE HAS BEEN ESTABLISHED. ALL SYSTEMS AND EQUIPMENT WILL BE ELECTRICALLY LOADED WITH ACTUAL OR DUMMY LOADS, AND EMERGENCY GENERATORS RUNNING.			
POWER FAILURES ON LCC, PAD A & B INDUSTRIAL AND INSTRUMENTATION BUSES WILL BE SIMULATED. A MOMENTARY FAILURE WILL BE INITIATED TO TEST THE ABILITY TO RECOVER AND PICK UP COUNT AT T-2 HOURS, ALSO A QUICK RECOVERY OF THE 110A GROUND COMPUTER WILL BE INITIALIZED TO PROVIDE SUPPORT WITHIN 20 MINUTES AFTER THE FIRST OUTAGE. AN EXTENDED POWER OUTAGE (40 MINUTE) WILL BE INITIATED TO TEST THE CAPABILITY FOR RECOVERY AND SECURING ON EMERGENCY POWER, INCLUDING SAFING AND DRAINING OF THE LAUNCH VEHICLE.			
AFTER POWER IS RESTORED, EACH USER WILL PROVIDE AN APPROXIMATE LOAD PROFILE OF EACH BUS TO CLES. THIS PROFILE SHALL INCLUDE ACTUAL CURRENTS EXPERIENCED WHILE ON BACKUP BATTERIES DURING POWER OUTAGE, AND SHALL BE EXTRAPOLATED TO INDICATE CURRENT REQUIREMENTS FOR A-TOTAL DRAIN.			
TEST REQUIREMENTS:			
NONE			
C	9/5/74	ASTP UPDATE	S/J.D.OWENS 9/1/74 S/F. BRYAN 9/2/74
B	8/7/72	ADD PAD A & RD 110., CHG. HAZ. OPERATIONS	S/J.D.OWENS 8/1/72 S/F. BRYAN 8/2/72
A	5/17/72	ADD MOMENTARY POWER OUTAGE	S/J.D.OWENS S/F. BRYAN
6. REV.	DATE	REASON	Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL		8. ORGANIZATION	9. DATE
S/L. R. CORBRIDGE		5-8771	3/10/72
10. NASA-KSC APPROVAL		11. ORGANIZATION	12. APPROVAL DATE
S/FRANK BRYAN		LV-ENG	3/14/72

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
SATURN IB LAUNCH VEHICLE OPERATIONS FOR FACILITY POWER OUT TEST		V-20115	
3. EFFECTIVITY		AS-206 AND SUBS	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME	
LC-39 PAD A & B	LA01, OAPU, NT98, NT99	3 HOURS	
16. SUPPORT REQUIREMENTS			
110A COMPUTER LV POWER UP DTS DEE-3 PTCS PROPELLANT DC POWER LSS POWER UP BACKUP BATTERIES OTV OTV LIGHTING INDUSTRIAL WATER			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
V-20114 - LAUNCH VEHICLE PROPELLANT SIMULATED LOADING TEST			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 3
1. TEST TITLE	2. KSC TEST NUMBER V-20116	
SATURN IB LAUNCH VEHICLE PROPELLANT LOADING AND ALL SYSTEMS TEST	3. EFFECTIVITY AS-206 AND SUSS	
4. TEST OBJECTIVES		
1. TO DEMONSTRATE THE TIME PHASING OF THE SEQUENCES NECESSARY TO LOAD CRYOGENIC PROPELLANTS ABOARD THE LAUNCH VEHICLE. 2. TO DEMONSTRATE THE TIME PHASING OF COMPUTERIZED TEST AND CHECKOUT PROGRAMS REQUIRED TO PREPARE THE LAUNCH VEHICLE FOR LAUNCH. 3. TO DEMONSTRATE ABILITY TO SAFE AND DRAIN THE LAUNCH VEHICLE.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION		
THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
TEST OPERATIONS ARE CONSIDERED HAZARDOUS FOR THE FOLLOWING REASONS:		
1. RP-1 WILL BE LOADED 2. PROPELLANT TANKS AND GAS STORAGE SPHERES WILL BE PRESSURIZED 3. HAZARDOUS ENVIRONMENTAL CONDITIONS MAY BE ENCOUNTERED 4. CRYOGENIC LIQUIDS WILL BE LOADED 5. HEAVY EQUIPMENT MOVEMENTS WILL BE REQUIRED		
CONFIGURATION		
THE LAUNCH VEHICLE MUST BE ON THE PAD WITH ALL PREREQUISITE TESTS COMPLETED.		
TEST DESCRIPTION		
THE PROCEDURE WILL BE ORGANIZED AS FOLLOWS:		
1. PART 1 WILL COVER LAUNCH VEHICLE TANK PURGES & RP-1 LOADING. 2. PART 2 WILL COVER BATTERY SIMULATOR INSTALLATION, LOX & LH2 SYSTEM PREPS, MSS MOVE TO PARK SITE, PROPELLANT TANKING COMPUTER SYSTEM PREPS, INDUSTRIAL WATER SYSTEM PREPS, ELECTRICAL SUPPORT PREPS, VEHICLE CLOSEOUT AND OTHER SYSTEMS PREPS REQUIRED TO SIMULATE A T-8 HOUR LAUNCH DAY LAUNCH VEHICLE CONFIGURATION. ALL ITEMS NOT COMPATIBLE WITH CRYOGENIC PROPELLANT LOADING WILL BE REMOVED. THERE WILL BE NO SPACECRAFT INTERFACES, NO ORDNANCE INSTALLATION EXCEPT INERT PROPELLANT DISPERSION DEVICES AND NO S/A PRESSURIZATION. (CONTINUED ON PAGE 2, SECTION 18).		
TEST REQUIREMENTS: (SEE PAGE 3)		
E	9/15/74	ATTN: UPDATE
C	10/27/72	INCLUDE RP-1 DRAIN OPS
D	1/10/73	DELETE MANUAL POWER XFER APPENDIX
6. REV	DATE	REASON
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
S/J. D. OWENS	5-8771 (TBC)	FEB. 22, 1972
10. NASA KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
S/FRANK BRYAN	LV-ENG	FEB. 29, 1972

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 3
1. TEST TITLE	2. KSC TEST NUMBER V-20116	
SATURN IB LAUNCH VEHICLE PROPELLANT LOADING AND ALL SYSTEMS TEST	3. EFFECTIVITY AS-206 AND SUSS	
4. LOCATION LC-39B	14. COMPUTER PROCESS IDENTIFICATION SEE PAGE 3	15. 1ST TEST TIME 4 DAYS
16. SUPPORT REQUIREMENTS		
GROUND POWER S-IB STAGE POWER S-IVB STAGE POWER IU STAGE POWER ETR RANGE SAFETY KSC PAD SAFETY SECURITY POLICE FIRE FIGHTING MEDICAL PROPELLANTS DC POWER PTCs (ALL SYSTEMS)		
DTS DEE-3 DEE-6 110A COMPUTERS CM W-G ECS CCF CIF SEARCHLIGHTS DDAS TCE		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		
TEST DESCRIPTION (CONTINUED FROM PAGE 1, SECTION 5)		
3. PART 3 WILL COVER PAD CLOSEOUT OPERATIONS, CRYO PROPELLANT LOADING, SPECIAL CRYOGENIC TESTS AND THE TERMINAL COUNT SEQUENCE. FROM T-8 HOURS THROUGH INTERRUPTION OF THE TERMINAL COUNT SEQUENCE AT TIME FOR S-IB ENGINE IGNITION, THIS PROCEDURE WILL RESEMBLE THE COUNTDOWN DEMONSTRATION TEST PROCEDURE, V-20130, AS CLOSELY AS PRACTICAL. HOWEVER THIS PROCEDURE WILL NOT INCLUDE Q-BALL OPERATIONS, S/A 9 OPERATIONS, RETRACTION OF PRIMARY DAMPER AT COMPLETION OF PROPELLANT LOADING, SERVICE MODULE DELUGE PURGE SYSTEM OPERATIONS, HOLDDOWN ARM PRESSURIZATION, AUXILIARY PROPULSION SYSTEM PROPELLANT LOADING, ENGINE SERVICE PLATFORM LOWERING, REMOVAL OF S/A CARRIER LOCKS, S/A TIP PRESSURIZATION, ORONITE ABOARD THE S-IB STAGE, SPACECRAFT INTERFACES, S-IB THRUST CHAMBER JACKET PREFILL AND FLIGHT BATTERY INSTALLATION.		
4. APPENDICES WILL INCLUDE SAFING PROCEDURES; LOX & LH2 DRAIN; CONTINGENCY PROCEDURES (PROCEDURES TO ESTABLISH SAFE CONDITIONS FOR PAD ACCESS DURING CRYOGENIC PROPELLANT LOADING); RECYCLE OPERATIONS TO RETURN THE LV TO A T-15 MINUTE OR T-8 HOUR CONFIGURATION; POST TEST SECURING OPERATIONS, RP-1 DRAIN; AND GUIDELINES FOR EVALUATION OF TCS ANOMALIES.		



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APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET (CONTINUATION SHEET)									
PAGE 3 OF 3									
TEST TITLE									
SATURN 1B LAUNCH VEHICLE PROPELLANT LOADING AND ALL SYSTEMS TEST									
TEST CONTINUATION									
COMPUTER PROGRAM IDENTIFICATION (CONTINUED FROM PAGE 2, SECTION 14)									
BT02	CT03	FES0	FT20	FT43	IAP0	IAPX	IZ01	NT98	
BT03	CT04	FT01	FT23	FT45	IA00	IARS	IZ03	NT99	
BT01	CT05	FT02	FT25	FT47	IA00	IASP	LA01	OALB	
CT00	EA05	FT04	FT31	FT49	IA00	IATC	LAPW	CALS	
CT01	EA10	FT05	FT33	FT55	IAL0	IATS	LAG1	CAPU	
CT02	EA00	FT06	FT37	GE01	IALL	IZ01	LZTU	OATO	
CT07	EA00	FT10	FT42	GT10	IAMC	IZ00	MT01		
	EA00								
TEST REQUIREMENTS (CONTINUED FROM PAGE 1, SECTION 5)									
(S-1B)	00000000	3.5.2.3.1	3.5.2.5.1	3.5.2.6.1	3.3.0.1				
		3.5.2.3.2	3.5.2.5.2	3.5.2.6.2	3.3.6.4				
		3.5.2.3.3			3.3.2.4 (ALL)				



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KSC OPERATIONS APOLLO-SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
SATURN 1B LAUNCH VEHICLE OPERATIONS FOR LAUNCH VEHICLE OVERALL TEST #1 (PLUGS IN)		V-20117	
3. TEST OBJECTIVES		3. EFFECTIVITY	
TO VERIFY COMPATIBILITY AND PROPER OPERATION OF ALL LAUNCH VEHICLE AND GSE SYSTEMS DURING FIRING AND FLIGHT SEQUENCES, WITH SIMULATED UMBILICAL PLUG EJECTION AND SIMULATED LIFTOFF. THERE WILL BE TWO FLIGHT SEQUENCES, THE FIRST WILL VERIFY TIME BASE 2 INHIBIT. THE SECOND WILL VERIFY PROPER OPERATIONS OF THE LAUNCH VEHICLE THROUGH SIMULATED FLIGHT.		AS-207 AND SUBS	
5. TEST DESCRIPTION OR EQUIPMENT STATUS CONFIGURATION			
THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
(A) APPLICATION OF HYDRAULICS AND PNEUMATICS (B) VENTING OF TANKS (C) GIMBALING OF ENGINES			
THE LAUNCH VEHICLE WILL BE ELECTRICALLY AND MECHANICALLY MATED ON THE ML, LOCATED AT PAD B. THE TEST WILL BE CONDUCTED IN TWO PARTS. ALL APPLICABLE SYSTEMS OF THE LAUNCH VEHICLE, GSE WILL BE PREPARED AND CONDITIONS FOR PREPARATIONS COMPLETE WILL BE ACHIEVED. THE AUTOMATIC SEQUENCE WILL GENERATE STIMULI TO THE GSE THROUGH COMMIT AND SIMULATED LIFTOFF. UMBILICAL EJECTION, HOLDDOWN ARM RELEASE, AND SERVICE ARM RETRACTION WILL BE SIMULATED IN THE ESE. IN PART I: PRIOR TO START OF TERMINAL COUNT SEQUENCE, THE DDP 224 DISPLAY COMPUTER WILL BE FAILED WITH SWITCHOVER TO ALTERNATE FIRING ROOM VERIFIED; A FORCE JUMP WILL BE INITIATED IN THE ML COMPUTER; AND AUTOMATIC RECOVERY WILL BE VERIFIED. ALSO THE 110A ML MEMORY DRUM WILL BE POWERED OFF.			
DURING L/V PLUS TIME, THE LVDC LOCK OUT CAPABILITY WILL BE DEMONSTRATED DURING S-1B BOOST.			
PART I WILL BE PERFORMED WITH THE LVDC IN FLIGHT MODE AND WILL BE TERMINATED AT TIME FOR START OF TIME BASE 2.			
H	7/15/74	ASTP UPDATE	<i>[Signature]</i>
G	12/3/73	UPDATE MSFC REQUIREMENTS	<i>[Signature]</i>
F	7/11/73	EFFECTIVE THRU AS-209	<i>[Signature]</i>
E	5/12/73	REMOVE SC SUPPORT	<i>[Signature]</i>
D	5/15/73	AS-207 ONLY CHANGES	<i>[Signature]</i>
C	2/9/73	ALO COMPUTER PROGRAMS	S/J.D. OWENS S/F. BRYAN
B	11/3/72	UPDATE MSFC REQUIREMENTS	S/J.D. OWENS S/F. BRYAN
A	8/16/72	ADD: M415 EXPERIMENT & MSFC REQUIREMENTS	S/J.D. OWENS S/F. BRYAN
6. REV.	DATE	REASON	Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE	
S/J. D. OWENS	5-2771, BATC	FEB. 2, 1972	
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE	
S/FRANK BRYAN	LV-ENG	2/14/72	

APOLLO-SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
SATURN 1B VEHICLE OPERATIONS FOR LAUNCH VEHICLE OVERALL TEST #1 (PLUGS IN)		V-20117	
3. LOCATION		3. EFFECTIVITY	
LC-39 PAD B		AS-207 AND SUBS	
4. COMPUTER PROC. IDENTIFICATION		5. EST. TEST TIME	
FE50, FTB1, FT06, FT10, FT23, FT27, FT37, FT42, FT45		13 HOURS	
16. SUPPORT REQUIREMENTS			
GROUND POWER S-1B STAGE POWER S-1VB STAGE POWER TU POWER LCC DATA DISPLAY BACKUP BATTERIES OAT EQUIPMENT LCC MEASURING (LVO) GSE MEASURING (LVO) DDAS RD 25006		DDAS TAPE RECORDING MOBILE SERVICE STRUCTURE MEASURING RCA 110A COMPUTERS LOCAL COMMAND CARRIER TM RECORDS ALDS LCC TM STATION (MONITOR) LCC TM RECORDING DTS DEE-6	
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			
ITEM 5 - TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION (CONT'D)			
DURING RECYCLE TO PART II, THE GROUND COMPUTER SYSTEMS WILL BE RECOVERED. IN PART II, AFTER RECYCLE TO MINUS TIME, A COMPLETE FLIGHT MISSION WILL BE RUN. RANGE SAFETY COMMANDS WILL BE SENT TO CHECK THE RSCR SYSTEM.			
ITEM 14 - COMPUTER PROC. IDENTIFICATION (CONT'D)			
FT47, FT49, GE01, GT16, IAAR, IAFC, IALL, IAMC, IARS, IAPX, IATC, IATS, LAF2, LA01, LAPN, LZTU, NT98, NT99, OAPU, OAT1, EAIC, EASS			
ITEM 5 - TEST DESCRIPTION (CONTINUED)			
TEST REQUIREMENTS:			
(LV)	TM-011-001-2H	1.5.1 thru 1.5.2 7.0.1, 7.0.2,	
(IU)	7921601	NONE	
(S-1B)	60C0650	3.5.3.1.5, 3.5.4.1	
(S-1VB)	1B86721	NONE	



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1 TEST TITLE SATURN IB MOBILE LAUNCHER SLUG INSTALLATION		2 TEST NUMBER V-20118
3 EFFECTIVITY AS-206 AND SUBS		
4 TEST OBJECTIVES TO REPLACE FUSES WITH SLUGS OR HIGHER RATED FUSES IN THE CRITICAL MOBILE LAUNCHER 9C82 ELECTRICAL NETWORK DISTRIBUTOR, AND VISUALLY INSPECT REMAINING FUSES.		
5 TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS  SPECIFIED FUSES IN CIRCUITS DESIGNATED AS CRITICAL TO LAUNCH WILL BE REMOVED AND REPLACED WITH SLUGS OR HIGHER RATED FUSES TO PREVENT FUSE LINKS BREAKS RESULTING FROM VIBRATIONS DURING THE PERIOD FROM IGNITION THROUGH LIFTOFF. STAGE AND SYSTEM CONTRACTORS WILL BE RESPONSIBLE FOR THE DESIGNATION OF CIRCUIT FUSES. ALL REMAINING FUSES IN THE NETWORK DISTRIBUTORS WILL BE VISUALLY CHECKED FOR DAMAGE AND SECURE INSTALLATION.		
TEST REQUIREMENTS:  NONE		
6 DEV. DATE 9/15/71	ASTP UPDATE	7 CONTRACTOR APPROVAL J. E. Owens
8 ORGANIZATION 5-8771	REASON	9 DATE Oct. 18, 1971
10 NASA-KSC APPROVAL WFE Frank Bryan	11 ORGANIZATION LU-ENG	12 APPROVAL DATE Oct 27, '71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)	
1 TEST TITLE SATURN IB MOBILE LAUNCHER SLUG INSTALLATION	2 TEST NUMBER V-20118
3 EFFECTIVITY AS-206 AND SUBS	
4 TEST OBJECTIVES	
5 TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION	
6 DEV. DATE	7 CONTRACTOR APPROVAL
8 ORGANIZATION	9 DATE
10 NASA-KSC APPROVAL	11 ORGANIZATION
12 APPROVAL DATE	
13 LOCATION	
14 COMPUTER PAGE IDENTIFICATION	
15 SUPPORT REQUIREMENTS	
16 OTHER APPLICABLE REFERENCE DOCUMENTATION	
17 ITEM CONTINUATION	



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE SATURN IB BACKUP GUIDANCE SIMULATED FLIGHT TEST		2. KSC TEST NUMBER V-20119	
3. TEST OBJECTIVES 1. TO VERIFY PROPER SPACECRAFT AND LAUNCH VEHICLE GUIDANCE INTERFACE OPERATION. 2. TO VERIFY SPACECRAFT/LAUNCH VEHICLE GUIDANCE ELECTRICAL COMPATIBILITY AFTER A SIMULATED LV ATTITUDE REFERENCE FAILURE.		3. EFFECTIVITY AS-207 AND SUBS	
4. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. A. GIMBALLING OF ENGINES IS A HAZARDOUS CONDITION.  THE TEST WILL BE CONDUCTED IN THREE PARTS TO VERIFY THE FOLLOWING:  PART I - TILT AND ROLL SWITCHOVER CHARACTERISTICS - THE POLARITY OF TILT AND ROLL COMMANDS FROM THE S/C GUIDANCE TO THE S-IB ENGINE ACTUATORS, ALONG WITH THE SIGNAL CHARACTERISTICS OF S/C GUIDANCE COMMANDS AT SWITCHOVER, WITH BOTH LV AND S/C COMMANDS BEING NON-ZERO, ARE TO BE DEMONSTRATED IN A SINGLE RUN.  PART II - END TO END POLARITY TEST - THE POLARITY BETWEEN THE COUPLING DATA UNITS AND THE S-IB ENGINE ACTUATORS WILL BE DEMONSTRATED BY SIMULATED TORQUING OF THE IRIGS BY MEANS OF A SPECIAL K-START TEST PROGRAM.  PART III - SIMULATED FLIGHT PLUS TIME SEQUENCE TEST OBJECTIVES - THE PURPOSE OF THIS TEST IS TO VERIFY THE BACKUP GUIDANCE COMPATIBILITY BETWEEN THE SPACECRAFT AND LAUNCH VEHICLE IMMEDIATELY AFTER LIFTOFF AND DURING THE FIRST BOOST PHASE OF THE FLIGHT, A LAUNCH VEHICLE ATTITUDE REFERENCE FAILURE WILL BE SIMULATED. THE SINGLE SYSTEM FAILURE WILL BE SIMULATED PRIOR TO LVDC TIME-TILT PROFILE GENERATION AND IN SUFFICIENT TIME TO VERIFY PROGRAM LOCKOUTS OF ATTITUDE REFERENCE SWITCHOVER. DURING THE S-IB BURN MODE, S/C CONTROL WILL BE ENABLED, THE S/C CONTROL OF SATURN SWITCH WILL BE PLACED IN THE CMC POSITION, AND ROLL AND PITCH ERROR SIGNALS WILL BE GENERATED BY THE S/C GUIDANCE POLYNOMIAL. DURING THE S-IVB BURN AND COAST MODES, MANUAL CONTROL OF SATURN WILL BE INITIATED AND HAND CONTROL CHECKS WILL BE PERFORMED. THE RESPONSE AND NON-RESPONSE OF THE LAUNCH VEHICLE TO MCC-H WILL BE VERIFIED, BOTH IN MINUS TIME AND DURING THE SIMULATED FLIGHT.			
5. REV. DATE		REASON	
A 11/5/72		ASTP UPDATE	
B 5/30/73		ADD HFLT PARTICIPATION	
A 11/31/73		ADD MSFC REC, UPDATE COMPUTER PROG LIST	
6. CONTRACTOR APPROVAL		7. DATE	
S/J. D. OWENS		SEPT. 2, 1971	
8. NASA-KSC APPROVAL		9. DATE	
S/FRANK BRYAN		2/14/72	

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET 2		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE SATURN IB BACKUP GUIDANCE SIMULATED FLIGHT TEST		2. KSC TEST NUMBER V-20119	
3. LOCATION LC-39		3. EFFECTIVITY AS-207 AND SUBS	
4. SUPPORT REQUIREMENTS GROUND POWER S-IB STAGE POWER S-IVB POWER IU POWER SM POWER BACKUP BATTERIES COUNTDOWN CLOCK OAT EQUIPMENT DEE-3 CM POWER GMIL HFLT  DTS LCC MEASURING (LVO) LCC DATA DISPLAY DDAS DDAS TAPE RECORDING SERVICE STRUCTURE MEASURING RCA 110A COMPUTERS DEE-6 LCC TM STATION (MONITOR) LCC TM RECORDING RD 26006			
5. OTHER APPLICABLE REFERENCE DOCUMENTATION			
6. ITEM CONTINUATION 14. COMPUTER PROC. IDENTIFICATION (CONTINUED)  IAFC, IALL, IAMC, IAPX, IATC, IATS, LA01, LAF2, LAPH, NT98, NT99, OAPU, OAT1, CE10, FE50, FT27, FT37, GE01, LZTU, ZT96, FT55, FT47, FT45  5. TEST DESCRIPTION (CONTINUED)  TEST REQUIREMENTS:  (LV) TM-011-001-2H 1.1.1.2, 1.1.1.3, 1.1.1.4.1, 1.5.1 THRU 1.5.2, 7.0.1, 7.0.2  (IU) 7921601 0.3.5.2.5.3, 0.3.7.1.4			



APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)

PAGE 2 OF 2

1. TEST TITLE

SATURN IB LAUNCH VEHICLE OPERATIONS FOR FLIGHT READINESS TEST

V-00100

AS-205 AND SUBS

2. LOCATION

LC-39 PAD B

3. COMPUTER USED - CURRENT LOCATION

(SEE BLOCK 18)

4. TEST DURATION

15 HOURS

5. SUPPORT REQUIREMENTS

GROUND POWER

S-IB STAGE POWER

S-IVB STAGE POWER

IU POWER

SM POWER

BACK-UP BATTERIES

COUNTDOWN CLOCK

OAT EQUIPMENT DEE-3 ON POWER

DTS

LCC MEASURING (LVO)

LCC DATA DISPLAY

DDAS

DDAS TAPE RECORRING

SERVICE STRUCTURE MEASURING

RCA 1124 COMPUTERS

TEF-0

LCC TM STATION MONITOR

LCC TM RECORDING

USB STATION (SM-1)

CIF (DATA CORE MODULE FID)

RANGE RADAR (C-BAND)

RANGE CONTING RADAR (IU AND SYS)

RD 25001

6. OTHER APPLICABLE REFERENCE DOCUMENTATION

7. ITEM DESCRIPTION

14. COMPUTER PROC. IDENTIFICATION

BE02	EAPS	FT08	FT35	FC01	IALL	IEBA	LACI
BE03	EASS	FT10	FT37	GE01	IANK	IEBC	DAFC
BT01	FL50	FT11	FT45	GT10	IAPA	IEBA	CATI
EADS	FTB1	FT23	FT47	IAAR	IARS	IEBS	NTAS
EAIC	FT04	FT27	FT49	IAED	IATC	LAPN	NTSG
EAPF	FT06	FT33	FT55	IAFC	IATS	LAFD	ITSG

5. TEST DESCRIPTION (CONTINUED)

TEST REQUIREMENTS

LV	TM-011-001-2H	1.1.1.2, 1.1.1.3, 1.4.1.1, 1.4.1.2, 1.5.1 THRU 1.5.2.2 2.0.1.1, 2.0.1.2, 2.0.1.3, 2.0.1.4, 1.1.1.4.1, 1.5.1.1 2.0.1.5, 2.0.1.6, 7.0.1, 7.0.2
IU	7921601	0.3.4.2.3.2, 0.3.7.1.3, 0.3.5.2.2.3.1, 0.3.5.1.2.3.1 0.3.4.0.1
S-IVB	1685721	NONE
S-IB	60C06050	NONE



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE LV COUNTDOWN SIMULATION		2. KSC TEST NUMBER V-20126	
4. TEST OBJECTIVES TO VERIFY/MAINTAIN LV FIRING ROOM CREW PROFICIENCY.		3. EFFECTIVITY SIMULATOR	
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS TEST WILL SIMULATE IN THE LCC THE TERMINAL PORTION OF THE LV COUNTDOWN. THE LCC FUNCTION/S WILL BE DYNAMICALLY SIMULATED BY USE OF THE LV SIMULATOR.  ONLY THE LCC FACILITIES ARE REQUIRED. ML, LV, AND PAD SYSTEMS ARE NOT REQUIRED.  THE FIRING ROOM AND COMPUTER COMPLEX WILL BE CONNECTED TO THE LV SIMULATOR.			
TEST REQUIREMENTS: NONE			
6. REV.	DATE	REASON	APPROVAL
B	9/5/74	ASTP PLATE	<i>J. Owens</i> 9/5/74
A	3/7/74	PROGRAMS FOR LVOS	<i>J. Owens</i> 3/7/74
7. CONTRACTOR APPROVAL <i>J. Owens</i>		8. ORGANIZATION 5-8771	9. DATE Sept 18, 1972
10. NASA/KSC APPROVAL <i>R. E. Beaumont</i>		11. ORGANIZATION LV-00003	12. APPROVAL DATE Sept 27, 1972

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE LV COUNTDOWN SIMULATION		2. KSC TEST NUMBER V-20126	
13. LOCATION LC-39		14. COMPUTER PROC. IDENTIFICATION (SEE ITEM 18 BELOW)	
15. SUPPORT REQUIREMENTS XDS-930 COMPUTER (601 AND 604) LCC-RCA 110A COMPUTER LAB-RCA 110A COMPUTER COUNT CLOCK COUNT CLOCK DISPLAYS DDAS OIS OTV SIMULATION		16. TEST TIME 4 HOURS	
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			
14. COMPUTER PROC. IDENTIFICATION			
BE02	EADS	FT42	IALK
BE03	FE50	FT43	IAMC
BT01	FTB1	FT45	IAPX
CE10	FT03	FT47	IARS
CTB1	FT05	FT49	IASC
CTB2	FT06	FT55	IASL
CTB7	FT10	GE01	IATC
CTC3	FT20	GT16	IATS
CTC4	FT23	IAAR	LAPW
CTC5	FT31	IAED	LZT4
	FT37	IAFC	QALB
		IALI	QALS
			CAPU
			QATO
			QASB
			ZT96

KSC OPERATIONS  
APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET

PAGE 1 OF 2

1. TEST TITLE	2. KSC TEST NUMBER
SATURN S-IB RP-1 LOADING OPERATIONS	V-20127
3. TEST OBJECTIVES	4. EFFECTIVITY
TO TRANSFER RP-1 TO THE S-IB STAGE.	AS-206 AND SUBS

5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION

THIS TEST ☒ DOES ☐ DOES NOT CONTAIN HAZARDOUS OPERATIONS.

HAZARDS INVOLVE FLAMMABLE FUEL HANDLING.

ALL VEHICLE AND ACTIVE GSE SYSTEMS INVOLVED IN RP-1 LOADING MUST BE IN LOADING CONFIGURATION AND READINESS.

AN OIS VERIFICATION WILL BE MADE THAT ALL ASSOCIATED SYSTEMS AND ORGANIZATIONS ARE READY TO SUPPORT THE OPERATION.

THE S-IB STAGE FUEL TANK WILL BE LOADED TO A LEVEL CONSISTENT WITH STAGE REQUIREMENTS.

TEST REQUIREMENTS

(S-IB) 60006050 3.3.0.1, 3.5.2.5.2, 3.5.2.6.2

(MSFC) TM-011-001-2H 11.0.2, 11.0.3, 12.0.1

6. REV.	DATE	REASON
D	7/15/74	ASTP UPDATE
C	11/20/73	REVISE TEST REQUIREMENTS
B	10/26/72	ADD RD, ADD DEE-3 & DTS; ADD COMP. PROG., AND TEST REQUIREMENTS
A	8/10/72	TO ADD TEST REQUIREMENTS

7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
S/J. D. OWENS	5-8771 THE BOEING COMPANY	APRIL 17, 1972
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
S/FRANK BRYAN	LV-ENG	5/19/72

APOLLO-SATURN TEST AND OPERATIONS CATALOG (SHEET 2)

PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NUMBER
SATURN S-IB RP-1 LOADING OPERATIONS	V-20127
3. LOCATION	4. COMPUTER PAGE IDENTIFICATION
LC-39 PAD B	BE01, BE02, BT01
5. SUPPORT REQUIREMENTS	6. TEST TIME
RD 26230 KSC PAD SAFETY SECURITY POLICE FIRE FIGHTING DDAS TAPE RECORDING DDAS RCA-110A FGE MEASUREMENTS FACILITY COMM. (OIS) OTV SURVEILLANCE CAMERAS GROUND POWER	S-IB STAGE POWER HP GAS DEE-3 DTS (PROPELLANTS)

7. OTHER APPLICABLE REFERENCE DOCUMENTATION

8. ITEM CONTINUATION



KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE SATURN S-IB RP-1 REPLENISH & LEVEL ADJUST OPERATIONS		2. KSC TEST NUMBER V-20128
3. EFFECTIVITY AS-206 AND SUBS		
4. TEST OBJECTIVES TO PERFORM RP-1 REPLENISH AND LEVEL ADJUST OPERATIONS TO SUPPORT COST AND LAUNCH COUNTDOWN.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. HAZARDS INVOLVE FLAMMABLE FUEL HANDLING. ALL VEHICLE AND ACTIVE GSE SYSTEMS INVOLVED IN RP-1 LOADING MUST BE IN LOADING CONFIGURATION AND READINESS. AN OIS VERIFICATION WILL BE MADE THAT ALL ASSOCIATED SYSTEMS AND ORGANIZATIONS ARE READY TO SUPPORT THE OPERATION. THE REPLENISH SEQUENCE IS USED TO INSURE A SUFFICIENT QUANTITY OF RP-1 TO PERFORM AN ACCURATE LEVEL ADJUST DRAIN. THE LEVEL ADJUST SEQUENCE IS USED TO GRAVITY DRAIN THE S-IB STAGE UNTIL 100% FLIGHT MASS IS INDICATED ON THE S-IB RP-1 TANKING COMPUTER PANEL.  TEST REQUIREMENTS:  (S-IB) 60006050 3.3.0.1 (LV) TM-011-001-2H 12.0.1		
6. REV	DATE	REASON
	11/16/72	ASTP UPDATE
C	11/30/72	ADD LV TEST REQUIREMENTS
B	11/25/72	ADD COMP. PROG, CHANGE TO SUBTASY, ADD RD, ADD DEE-3 & DTS
A	8/10/72	TO ADD TEST REQUIREMENTS
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
S/D. D. OWENS	5-8771 THE BOEING COMPANY	APRIL 17, 1972
10. NASA/KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
S/FRANK BRYAN	LV-ENG	5/19/72

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE SATURN S-IB RP-1 REPLENISH & LEVEL ADJUST OPERATIONS		2. KSC TEST NUMBER V-20128
3. EFFECTIVITY AS-206 AND SUBS		
13. LOCATION LC-39 PAD B	14. COMPUTER NAME, IDENTIFICATION BE02, BE03	
15. SUPPORT REQUIREMENTS  RD 26231 KSC PAD SAFETY SECURITY POLICE FIRE FIGHTING DDAS TAPE RECORDING DDAS RCA-110A F&E MEASUREMENTS FACILITY COMM. (OIS) OTV SURVEILLANCE CAMERAS GROUND POWER  S-IB STAGE POWER HP GAS DEE-3 DTS (PROPELLANTS)		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE SATURN S-IB RP-1 DRAIN OPERATIONS		2. KSC TEST NUMBER V-20129
3. EFFECTIVITY AS-206 AND SUBS		
4. TEST OBJECTIVES TO PRESSURE DRAIN RP-1 FROM THE S-IB STAGE.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. HAZARDS INVOLVE FLAMMABLE FUEL HANDLING. ALL VEHICLE AND ACTIVE GSE SYSTEMS INVOLVED IN RP-1 DRAIN MUST BE IN DRAIN CONFIGURATION AND READINESS. AN OIS VERIFICATION WILL BE MADE THAT ALL ASSOCIATED SYSTEMS AND ORGANIZATIONS ARE READY TO SUPPORT THE OPERATION. THE S-IB RP-1 DRAIN SEQUENCE WILL BE PERFORMED FOR EMERGENCIES AND SPECIAL TESTS ONLY. THE DRAIN SEQUENCE WILL BE A PRESSURE DRAIN USING FLIGHT PRESSURE IN THE FUEL TANKS ALLOWING THE FUEL TO DRAIN BACK TO THE STORAGE TANKS. FOLLOWING THE STAGE DRAIN THE TRANSFER LINE WILL BE EMPTIED OF RESIDUAL RP-1.  TEST REQUIREMENTS: NONE		
6. REV.	DATE	REASON
B	4/5/74	ASTP UPDATE
A	10/26/72	ADD COMP. PROG., ADD RD, ADD DEE-3 & DTS
7. CONTRACTOR APPROVAL S/J. D. OWENS		8. ORGANIZATION 5-8771 THE BOEING COMPANY
9. DATE APRIL 17, 1972		
10. NASA/KSC APPROVAL S/FRANK BRYAN		11. ORGANIZATION LV-ENG
12. APPROVAL DATE 5/19/72		

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE SATURN S-IB RP-1 DRAIN OPERATIONS		2. KSC TEST NUMBER V-20129
3. EFFECTIVITY AS-206 AND SUBS		
12. LOCATION LC-39 PAD B	14. COMPUTER PAGE IDENTIFICATION BE02,BT01	15. TEST TIME TBO
16. SUPPORT REQUIREMENTS RD 26232 KSC PAD SAFETY SECURITY POLICE FIRE FIGHTING DDAS TAPE RECORDING DDAS RCA-110A F&E MEASUREMENTS FACILITY COMM. (OIS) OTV SURVEILLANCE CAMERAS GROUND POWER S-IB STAGE POWER HP GAS DEE-3 DTS (PROPELLANTS)		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		



7.7

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KSC OPERATIONS APOLLO-SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 4
1. TEST TITLE SATURN 1B LAUNCH VEHICLE OPERATIONS IN SUPPORT OF SPACE VEHICLE COUNTDOWN DEMONSTRATION TEST AND LAUNCH COUNTDOWN		2. KSC TEST NUMBER V-20130
3. EFFECTIVITY AS-209 AND SUBS		
4. TEST OBJECTIVES		
1. TO DEMONSTRATE, IN CONJUNCTION WITH APOLLO SPACECRAFT OPERATIONS, THE TIME PHASING OF THE SEQUENCES NECESSARY TO PREPARE THE LAUNCH VEHICLE FOR LAUNCH. 2. TO DEMONSTRATE THE TIME PHASING OF COMPUTERIZED TEST AND CHECKOUT PROGRAMS REQUIRED TO PREPARE THE LAUNCH VEHICLE FOR LAUNCH. 3. TO VERIFY THAT THE LAUNCH VEHICLE AND THE GROUND SUPPORT EQUIPMENT ARE IN A STATUS TO SUPPORT LAUNCH COUNTDOWN. (CONTINUED ON PAGE 2, SECTION 18)		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION		
THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
CCDT & CD OPERATIONS ARE CONSIDERED HAZARDOUS FOR THE FOLLOWING REASONS:		
1. RP-1 WILL BE ON BOARD 2. PROPELLANT TANKS AND GAS STORAGE SPHERES WILL BE PRESSURIZED. 3. HAZARDOUS ENVIRONMENTAL CONDITIONS MAY BE ENCOUNTERED. 4. CRYOGENIC LIQUIDS WILL BE LOADED. 5. HEAVY EQUIPMENT MOVEMENTS WILL BE REQUIRED. 6. THE FLIGHT CREW WILL INGRESS AND THE HATCH WILL BE CLOSED. 7. LIVE ORDNANCE WILL BE INSTALLED AND CONNECTED. 8. ENGINE IGNITION WILL OCCUR.		
CONFIGURATION:		
THE LAUNCH VEHICLE MUST BE ON THE PAD WITH ALL PREREQUISITE TESTS COMPLETED.		
TEST DESCRIPTION (SEE PAGE 2, SECTION 18)		
TEST REQUIREMENTS (SEE PAGE 3)		
4. REV. DATE	REASON	5. DATE
11/5/74	ACTP UPDATE	11/5/74
6. CONTRACTOR APPROVAL	7. ORGANIZATION	8. DATE
S/J.D. O'NEIL	5-8771	FEB. 22, 1972
10. NASA/KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
S/FRANK BRYAN	LV-ENG	FEB. 29, 1972

APOLLO-SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 4
1. TEST TITLE SATURN 1B LAUNCH VEHICLE OPERATIONS IN SUPPORT OF SPACE VEHICLE COUNTDOWN DEMONSTRATION TEST AND LAUNCH COUNTDOWN		2. KSC TEST NUMBER V-20130
3. EFFECTIVITY AS-209 AND SUBS		
13. LOCATION LC-39B	14. COMPUTER PROC IDENTIFICATION SEE PAGE 3	15. EST TEST TIME 4 DAYS PLUS HOLDS
16. SUPPORT REQUIREMENTS		
SD/RD 25000 GROUND POWER S-1B STAGE POWER S-1VB STAGE POWER IU STAGE POWER ETR RANGE SAFETY KSC PAD SAFETY SECURITY POLICE FIRE FIGHTING MEDICAL PROPELLANTS DC POWER PTCs (ALL SYSTEMS) DTS DEE-3 DEE-6 110A COMPUTERS CM W-G ECS CCF CIF SEARCHLIGHTS TCE		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
S/V PROCEDURE 40400 ETR CD 25000 LMRD K-1B-02.10 S/C PROCEDURE K0007 S/V SCRUB TURNAROUND 40400		
18. ITEM CONTINUATION		
TEST OBJECTIVES (CONTINUED FROM PAGE 1, SECTION 4)		
4. TO PROVIDE THE CAPABILITY TO SAFE AND DRAIN THE LAUNCH VEHICLE IF NECESSARY. 5. TO PREPARE THE LAUNCH VEHICLE FOR LAUNCH 6. TO LAUNCH THE SPACE VEHICLE		
TEST DESCRIPTION (CONTINUED FROM PAGE 1, SECTION 5)		
A. THE TOTAL PROCEDURE IS DIVIDED INTO THREE VOLUMES AS FOLLOWS:		
1. VOLUME I WILL INCLUDE TANK AND FACILITY PURGES, ORDNANCE INSTALLATION AND CONNECTION, DIGITAL RANGE SAFETY COMMAND SYSTEM TESTS AND SERVICE ARM PRESSURIZATION. 2. VOLUME II WILL INCLUDE FLIGHT BATTERY INSTALLATION, ACCESS KIT REMOVAL, LAUNCH VEHICLE FINAL CLOSEOUT OPERATIONS, MSS TRANSFER OPERATIONS, CRYOGENIC PROPELLANT LOADING, AND THE TERMINAL COUNT SEQUENCE. APPENDICES WILL INCLUDE SAFING PROCEDURES, DRAIN OPERATIONS, CONTINGENCY PROCEDURES AND RECYCLE OPERATIONS. 3. VOLUME III WILL INCLUDE GUIDELINES FOR EVALUATION OF ANOMALIES WHICH MIGHT OCCUR DURING THE TERMINAL COUNT SEQUENCE (TCS). THIS VOLUME CONTAINS A DESCRIPTION, FOR EACH TCS SEQUENCE, OF THE POTENTIAL SIGNIFICANCE OF THE ANOMALY, THE STATION(S) RESPONSIBLE FOR ACTION, THE ACTION TO BE TAKEN AND THE RATIONALE FOR THE PRESCRIBED ACTION.		

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APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET (CONTINUATION SHEET)		PAGE 3 OF 4
1. TEST TITLE		2. SSC TEST NUMBER
SATURN IB LAUNCH VEHICLE OPERATIONS IN SUPPORT OF SPACE VEHICLE COUNTDOWN DEMONSTRATION TEST AND LAUNCH COUNTDOWN		V-20130
		3. EFFECTIVITY
		AS-209 AND SUBS

ITEM CONTINUATION

## TEST DESCRIPTION (CONTINUED)

## B. TEST COMPARISONS

IF A COUNTDOWN DEMONSTRATION TEST IS PERFORMED, THE SEQUENCE OF OPERATIONS WILL BE THE SAME AS THE LAUNCH COUNTDOWN WITH THE FOLLOWING MAJOR EXCEPTIONS: LAUNCH VEHICLE BATTERIES WILL NOT BE INSTALLED; PROPELLANT DISPERSION DETRATORS, PRIMACORD, HOLDDOWN ARM ORDNANCE AND SOLID PROPELLANT GAS GENERATOR INITIATORS WILL NOT BE CONNECTED; THE FLIGHT CREW WILL NOT INGRESS THE SPACECRAFT; AND THE TERMINAL COUNT SEQUENCE WILL BE INTERRUPTED AT TIME FOR S-IB ENGINE IGNITION. FOR LAUNCH COUNTDOWN THE TERMINAL COUNT WILL RESULT IN LAUNCH OF THE SPACE VEHICLE. OPERATIONS TO SECURE GROUND SUPPORT EQUIPMENT AFTER LAUNCH WILL BE INCLUDED.

## COMPUTER PROGRAM IDENTIFICATION (CONTINUED FROM PAGE 2, SECTION 14)

BE02	CTB7	EASS	FT03	FT20	FT37	FT55	IAAR	IALL	IATC	IZ33	NT98
BE03	CTC3	EADS	FT04	FT23	FT42	GE01	IAED	IAMC	IATS	LAF2	NT99
BT01	CTC4	EAPS	FT05	FT25	FT43	GT16	IAES	IAPX	IZEA	LAPW	OALB
CTB1	CTC5	EAPU	FT06	FT31	FT45		IAFC	IARS	IZRE	LA01	OALS
CTB2	EA1C	FES0	FT10	FT33	FT47		IALW	IASL	IZSA	LZTU	OAPU
CE10		FTB1	FT08	FT35	FT49			IASP		MT01	OATO
											ZT96

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET (CONTINUATION SHEET)		PAGE 4 OF 4
1. TEST TITLE		2. SSC TEST NUMBER
SATURN IB LAUNCH VEHICLE OPERATIONS IN SUPPORT OF SPACE VEHICLE COUNTDOWN DEMONSTRATION TEST AND LAUNCH COUNTDOWN		V-20130
		3. EFFECTIVITY
		AS-209 AND SUBS

ITEM CONTINUATION

## TEST REQUIREMENTS: (CONTINUED FROM PAGE 1, SECTION 5)

(S-IB)	60C06050	3.2.1.1	3.3.2.4.1	3.6.1.1.1	3.6.1.4	3.6.4.2
		3.2.1.2	3.3.2.4.2	3.6.1.1.2	3.6.2.1	3.7.2.21.4
		3.2.2.3	3.5.2.3.2	3.6.1.2	3.6.2.2	3.6.2.3
		3.2.5.3.6	3.5.2.3.3	3.6.1.3.1	3.6.4.1	
				3.6.1.3.2		
		0.2.5.1.2.0	0.2.5.4.1.2			
		0.2.5.4.1.1	0.2.5.4.1.3	0.2.5.4.1.4.1.1		
(S-IVB)	1886721	0.2.5.2.3.1	0.2.5.2.3.2		0.2.5.4.5.0(ALL)	
(IV)	7921601	0.3.4.1.1.1.1	0.3.4.1.1.1.2	0.3.5.2.1.3.1	0.3.5.2.7	
		0.3.5.2.8	0.3.5.3.1.2	0.3.5.3.2	0.3.5.3.4	
		0.3.5.2.5.2	0.3.2.1.1			
(LV)	TM-011-001-24	1.1.1.3	1.4.1.2	3.0.1	10.0.1.4	
		1.1.1.4.1	1.4.2	4.0.1	11.0.4	
		1.2.1 (ALL)		9.0.1.3	13.0.1	
		1.2.3.1	1.7.1.1	9.0.1.4	14.0.3.1	
		1.2.3.2	1.7.1.2	10.0.1	14.0.4.1.1	
		1.2.3.4	1.8.1	10.0.1.1	14.0.4.2	
		1.2.3.3	1.8.2	10.0.1.2	14.0.4.3	
		1.2.2		10.0.1.5		
			1.5.1 THRU 1.5.1.2.2			



KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE SATURN S-1B VEHICLE LOX/LH2 TANKS AND FACILITY LH2 SYSTEM PURGE.		2. KSC TEST NUMBER V-20131
		3. EFFECTIVITY AS-206 AND SUBS
4. TEST OBJECTIVES <p><u>VOLUME I</u> - TO PURGE THE S-IVB LOX AND LH2 TANKS, S-IVB ENGINE FUEL DUCT, S-IVB GSE HEAT EXCHANGER AND FACILITY LH2 SYSTEM PRIOR TO CRYOGENIC LOADING OF STAGES.</p> <p><u>VOLUME II</u> - TO PURGE THE VEHICLE AND GROUND SYSTEMS OF LH2 FOLLOWING VEHICLE CRYOGENIC DRAIN AND INERT THE GROUND SYSTEMS FOLLOWING LAUNCH.</p>		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION <p>THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p><u>VOLUME I</u> HAZARDS INCLUDE HIGH PRESSURE AND INERT ATMOSPHERE.</p> <p><u>VOLUME II</u> HAZARDS INCLUDE HIGH PRESSURE, GH2 ATMOSPHERE, AND INERT ATMOSPHERE.</p> <p><u>VOLUME I</u></p> <p>AFTER TEST PREPARATIONS, A HELIUM PURGE OF THE S-IVB LOX TANK AND SYSTEMS WILL BE PERFORMED. THE STAGE LOX TANK SHALL BE CONSIDERED PURGED WHEN A MOISTURE CONTENT LESS THAN 200 PPM IN THE S-IVB STAGE IS ACHIEVED WITH A CONTAMINATION LESS THAN 1% BY VOLUME. SUBSEQUENT TO THE STAGE LOX TANK PURGE, A SYSTEMATIC HELIUM PURGING OF THE S-IVB STAGE LH2 TANK AND SYSTEMS WILL BE ACCOMPLISHED. AFTER A VERIFICATION OF 99% HELIUM, AND LESS THAN 200 PPM MOISTURE CONTENT IN THE S-IVB STAGE LH2 TANK, THE FACILITY LH2 SYSTEM, S-IVB STAGE HEAT EXCHANGER AND THE STAGE/FACILITIES ACCESSORIES SHALL BE PURGED WITH GHE AND VERIFIED TO CONTAIN 0% OXYGEN AND THE LH2 TRANSFER LINES VERIFIED TO CONTAIN 99.9% GHE AND A DEW POINT OF -65° OR LESS.</p> <p>FOLLOWING THE PURGE, ALL SYSTEMS SHALL BE PLACED IN A STANDBY CONFIGURATION WITH HELIUM IN ALL SYSTEMS. AFTER A MINIMUM OF 8 HOURS FOLLOWING COMPLETION OF LH2 FACILITY PURGES, REPEATED DEW POINT READINGS SHALL BE TAKEN TO INSURE THE SYSTEMS ARE WITHIN SPECIFICATIONS.</p> <p><u>VOLUME I</u> <u>TEST REQUIREMENTS:</u></p> <p>NONE</p>		
6. REV. DATE	REASON	7. DATE
C 8/15/74	ASTP UPDATE	8/15/74
B 12/15/73	REVISE RD NUMBER	12/15/73
A 12/4/72	ADD RD NO. RD S-IV B GSE HEAT EXCHANGER & S-IVB SKID.	12/4/72
8. CONTRACTOR APPROVAL	9. ORGANIZATION	10. DATE
S/J. D. OWENS	5-8771	JULY 6, 1972
11. NASA KSC APPROVAL	12. ORGANIZATION	13. APPROVAL DATE
S/FRANK BRYAN	LV-ENG	JULY 20, 1972

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET 2		PAGE 2 OF 2
1. TEST TITLE SATURN S-1B VEHICLE LOX/LH2 TANKS AND FACILITY LH2 SYSTEM PURGE.		2. KSC TEST NUMBER V-20131
		3. EFFECTIVITY AS-206 AND SUBS
13. LOCATION LC-39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 17 HOURS
16. SUPPORT REQUIREMENTS		
<p><u>VOLUME I</u></p> <p>SID-20131-B PROPELLANT NETWORKS S-IVB GSE GROUND POWER S-IVB STAGE POWER DDAS RCA 110A COMPUTERS KSC PAD SAFETY</p>		<p><u>VOLUME II</u></p> <p>SID-20131-B PAD OIS FACILITY LH2 SUPPLY SYSTEM SUPPORT H.P. GHE &amp; GH2 S-IVB GROUND &amp; STAGE PNEUMATICS RCA 110A COMPUTERS DDAS KSC PAD SAFETY</p>
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
VOL. I - N/A		VOLUME II - N/A
18. ITEM CONTINUATION ITEM 5. (CONTINUED)		
<p><u>VOLUME II</u></p> <p>AFTER VEHICLE LH2 &amp; LOX ARE DRAINED, THE VEHICLE LH2 &amp; GROUND LH2 SYSTEMS WILL BE PURGED WITH GHE. SAMPLES WILL BE TAKEN AS PURGE IS CONTINUED. PAD SAFETY WALK THRU WILL ASSURE THAT LESS THAN 4% GH2 AT THE S-IVB SKID LEVEL IS ACHIEVED BEFORE PAD OPENING. WHEN LESS THAN 4% GH2 IS ACHIEVED, ALL SYSTEMS MAY BE SECURED.</p> <p><u>VOLUME II</u> <u>TEST REQUIREMENTS:</u></p> <p>NONE</p>		

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE SATURN IB LAUNCH VEHICLE AUTOMATIC AND MANUAL LOX/LH2 LOADING AND DRAIN OPERATIONS		2. KSC TEST NUMBER V-20132
3. EFFECTIVITY AS-207 & SUBS		
4. TEST OBJECTIVES TO FILL THE S-IB STAGE WITH LIQUID OXYGEN AND THE S-IVB STAGE WITH LIQUID OXYGEN AND LIQUID HYDROGEN TO THE REQUIRED FLIGHT MASS FOR THE SATURN IB LAUNCH VEHICLE. TO DRAIN THE LAUNCH VEHICLE LOX AND LH2 TANKS WHEN SUPPORTING CDDT OR A LAUNCH ABORT AND SCOPUR.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. HAZARDS INCLUDE: A. CRYOGENIC PROPELLANTS B. PROPELLANT SYSTEMS PRESSURES C. INERT ATMOSPHERES  LV TANKING THIS TEST WILL BE PERFORMED AS A SUBTASK TO LV COUNTDOWN AND CDDT AFTER ALL PROPELLANT LOADING PREREQUISITES HAVE BEEN COMPLETED. ALL VEHICLE AND ACTIVE GSE SYSTEMS INVOLVED IN PROPELLANT LOADING MUST BE IN LAUNCH DAY CONFIGURATION AND READINESS. THIS PROCEDURE PROVIDES THE STEPS REQUIRED FOR BOTH AUTOMATIC LOADING VIA THE PROPELLANT LOADING COMPUTER SYSTEM, OR VIA MANUAL OPERATIONS IN THE EVENT OF A SYSTEM FAILURE. PROPELLANT LOADING WILL BE INITIATED WITH LOX STORAGE TANK PRESSURIZATION AND LOX TRANSFER SYSTEM CHILLDOWN. THE S-IB IS LOADED FIRST BY SLOW FILL, FAST FILL, THEN SLOW FILL RATES TO 99% MASS. THE S-IVB IS THEN LOADED BY SLOW FILL, FAST FILL, THEN SLOW FILL RATES TO 99% MASS. NORMAL REPLENISH BRINGS THE STAGES UP TO, AND MAINTAINS, 100% MASS LEVELS. THE LH2 STORAGE TANK IS THEN PRESSURIZED AND THE LH2 TRANSFER SYSTEM CHILLED DOWN. AT S-IVB LOX 25%, THE S-IVB IS LOADED BY SLOW FILL, FAST FILL, THEN SLOW FILL RATES TO 100% MASS, THEN REPLENISH IS ENABLED TO MAINTAIN THAT LEVEL. LOX AND LH2 REPLENISH TERMINATES AT THE START OF THE TERMINAL COUNT SEQUENCE. D 10/30/73 CHANGE MSFC TEST REQS C 6/15/73 EARLY START S-IVB LH2 CHILLDOWN B 3/27/73 REVISE TEST REQUIREMENTS A 12/15 ADD RD & TEST REQUIREMENTS 6. REV. DATE REASON 7. CONTRACTOR APPROVAL J. D. Owens 8. ORGANIZATION 5-8771 9. DATE Feb. 2, 1972 10. NASA-KSC APPROVAL Frank Rogers 11. ORGANIZATION LV-ENG 12. APPROVAL DATE 3/14/72		

APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET 2		PAGE 2 OF 2
1. TEST TITLE SATURN IB LAUNCH VEHICLE AUTOMATIC AND MANUAL LOX/LH2 LOADING AND DRAIN OPERATIONS		2. KSC TEST NUMBER V-20132
3. LOCATION LC-39 PAD B		4. EFFECTIVITY AS-207 & SUBS
5. SUPPORT REQUIREMENTS GROUND POWER S-IB STAGE POWER S-IVB STAGE POWER BACKUP BATTERIES SEARCH LIGHTS KSC PAD SAFETY SECURITY POLICE FIRE FIGHTING FGE MEASUREMENTS IU STAGE POWER		6. PROPELLANT UTILIZATION SYSTEM LSE/GSE TM LCC MEASURING (LVO) GSE MEASURING (LVO) LCC DATA DISPLAY DDAS RCA 110A COMPUTERS RD 26032
7. OTHER APPLICABLE REFERENCE DOCUMENTATION		
8. ITEM CONTINUED FROM ITEM 5. (CONTINUED)  LV DRAIN AFTER PREPARATIONS ARE COMPLETED, DRAIN IS INITIATED BY S-IVB LH2 TANK PRESSURIZATION, LH2 STORAGE TANK VENTING, AND OPENING THE S-IVB LH2 FILL AND DRAIN VALVE. WHEN LH2 DRAIN IS COMPLETE, THE STAGE VALVE IS CLOSED AND A SHORT PURGE EMPTIES THE LINES BACK TO THE STORAGE TANK. WHEN LH2 DRAIN IS COMPLETE, LOX DRAIN IS INITIATED BY LOX STORAGE TANK VENTING AND S-IB AND S-IVB LOX TANKS PRESSURIZATION. THE S-IVB IS DRAINED FIRST, THEN THE S-IB. PROPELLANT DRAIN IS COMPLETE AND TANK PURGING INITIATED AT APPROXIMATELY T+2 HOURS 50 MINUTES.  TEST REQUIREMENTS: (LV) TM-011-001-2H 11.0.1, 12.0.1 (S-IB) 60C06050 3.3.0.1 (S-IVB) 1B86721 0.2.5.4.6.0 ALL 0.2.5.4.7.1 0.2.5.4.7.2		



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>																		
1. TEST TITLE	2. KSC TEST NUMBER																			
SATURN IB LAUNCH VEHICLE EMERGENCY PROCEDURE	V-20153																			
	3. EFFECTIVITY																			
	AS-206 AND SUBS																			
4. TEST OBJECTIVES																				
<p>TO PROVIDE THE REQUIRED CORRECTIVE ACTIONS TO BE TAKEN FOR SPECIFIC EMERGENCY SITUATIONS TO PREVENT SERIOUS INJURY TO PERSONNEL OR SIGNIFICANT DAMAGE TO HARDWARE.</p>																				
5. TEST DESCRIPTION/EQUIPMENT STATUS CONFIGURATION																				
<p>THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>THIS TCP CONTAINS PROCEDURES FOR SPECIFIC EMERGENCY SITUATIONS. PROCEDURAL CONTENT IS SHOWN ON THE TEST OUTLINE AND IN THE TABLE OF CONTENTS. USE OF THIS TCP IS DESCRIBED IN THE INTRODUCTION SECTION.</p> <p>THE EMERGENCY PROCEDURES IN THIS TCP INTEGRATE LAUNCH VEHICLE TEST CREW ACTIVITY BY CALLING OUT SUBTASKS (BY TCP REFERENCE) TO BE ACCOMPLISHED IN TOTAL OR IN PART, AND BY CALLING OUT SPECIFIC CONSOLE-LEVEL ACTIONS WHERE APPROPRIATE. REQUIRED ACTIONS ARE PROCEDURALIZED ONLY TO THE LEVEL REQUIRED TO INTEGRATE OVERALL ACTIVITIES. IN GENERAL, THE EMERGENCY STEPS COVER ONLY ACTIONS REQUIRED TO BRING THE SITUATION TO A SAFE STATIC CONDITION. REAL TIME ASSESSMENTS AND DECISIONS WILL THEN BE MADE TO RETURN TO NORMAL OPERATIONS.</p>																				
TEST REQUIREMENTS:																				
NONE																				
<table border="1"> <tr> <td>6. REV. DATE</td> <td>REASON</td> <td>7. DATE</td> </tr> <tr> <td>A 9/5/74</td> <td>KSTP UPDATE</td> <td>August 25, 1971</td> </tr> <tr> <td colspan="2">8. CONTRACTOR APPROVAL</td> <td>9. DATE</td> </tr> <tr> <td colspan="2">[Signature]</td> <td>August 25, 1971</td> </tr> <tr> <td colspan="2">10. KSC APPROVAL</td> <td>11. APPROVAL DATE</td> </tr> <tr> <td colspan="2">[Signature]</td> <td>9/13/71</td> </tr> </table>			6. REV. DATE	REASON	7. DATE	A 9/5/74	KSTP UPDATE	August 25, 1971	8. CONTRACTOR APPROVAL		9. DATE	[Signature]		August 25, 1971	10. KSC APPROVAL		11. APPROVAL DATE	[Signature]		9/13/71
6. REV. DATE	REASON	7. DATE																		
A 9/5/74	KSTP UPDATE	August 25, 1971																		
8. CONTRACTOR APPROVAL		9. DATE																		
[Signature]		August 25, 1971																		
10. KSC APPROVAL		11. APPROVAL DATE																		
[Signature]		9/13/71																		

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
SATURN IB LAUNCH VEHICLE EMERGENCY PROCEDURE	V-20153	
	3. EFFECTIVITY	
	AS-206 AND SUBS	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME
LC-39	PER SUBTASK TCP'S SEQUENCED BY THIS TCP	NOT APPLICABLE
16. SUPPORT REQUIREMENTS		
<p>NONE SPECIFICALLY SCHEDULED FOR THIS TCP. EMERGENCY SUPPORT REQUIREMENTS ARE IDENTIFIED AND SCHEDULED PER THE REFERENCED TCP'S SEQUENCED BY THIS TCP.</p>		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
TCP'S AS REFERENCED WITHIN THIS TCP.		
18. ITEM CONTINUATION		

KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 3
1. TEST TITLE IU POWER APPLICATION/REMOVAL	2. KSC TEST NUMBER V-21223	
		3. EFFECTIVITY SL-206 & SUBS AS-512 & SUBS
4. TEST TITLE NOTES THE PURPOSE OF THIS PROCEDURE IS TO PROVIDE THE INSTRUCTIONS FOR PROPERLY APPLYING AND REMOVING POWER TO THE IU STAGE AND ASSOCIATED ESE, EITHER MANUALLY OR AUTOMATICALLY. INSTRUCTIONS FOR REMOVING POWER IN CERTAIN EMERGENCY SITUATIONS ARE INCLUDED.		
5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION THIS TEST DOES NOT CONTAIN HAZARDOUS OPERATIONS. PRIOR TO THE APPLICATION OF POWER, RESISTANCE READINGS WILL BE MADE BETWEEN EACH BUS AND RETURN BUS PER APPLICABLE IU BUS READING SHEET TO ENSURE SYSTEM INTEGRITY. THESE READINGS WILL BE OBTAINED USING SIMPSON 260 OR EQUIVALENT. ALL IU CABLING WILL BE PER APPLICABLE SCHEMATICS EXCEPT AS OTHERWISE REQUIRED BY OTHER APPROVED PROCEDURES. THE PROCEDURE WILL BE DIVIDED INTO SECTIONS AND SUB-SECTIONS AS NECESSARY TO DISTINGUISH BETWEEN DIFFERENT MODES OF OPERATION. PART I: PREPARATIONS: THIS SECTION DEFINES IN DETAIL THE SUPPORT REQUIREMENTS IMPOSED BY THIS PROCEDURE AS WELL AS THE PRELIMINARY PREPARATIONS REQUIRED PRIOR TO ENERGIZING ANY POWER SUPPLY. PART II: THIS SECTION PROVIDES A DETAILED PROCEDURE FOR APPLYING POWER TO THE IU STAGE AND SPECIFIES AT WHAT TIMES THE IU COOLANT AND TELEMETRY WILL BE TURNED ON. THE STAGE VOLTAGE VALUES AND TOLERANCES SPECIFIED ARE PER APPLICABLE IU SPECIFICATIONS AND CHECKOUT PROCEDURE. PART III: POWER OFF: DETAILS THE SEQUENCE OF EVENTS FOR THE COMPLETE SHUTDOWN OF IU POWER. APPENDIX 1: EMERGENCY POWER DOWN: THIS SECTION IS DESIGNED FOR THE REMOVAL OF POWER AS QUICKLY AND AS SAFELY AS POSSIBLE. VERIFICATION OF LVDC/LVDA "HALT" AND "MEMORY RELEASE" PRIOR TO POWER REMOVAL IS LEFT TO THE DISCRETION OF THE IBM TEST CONDUCTOR. PHASE: II & IV TEST REQUIREMENTS MSFC TM-011-01-2H 13.2.1.1.2		
SEE CONTINUATION SHEET FOR REVISION HISTORY		
6. REVISIONS	7. REASON	8. CONTRACTOR APPROVAL
9. DATE	10. ORGANIZATION	11. DATE
12. APPROVAL DATE	13. ORGANIZATION	14. DATE

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 3
1. TEST TITLE IU POWER APPLICATION/REMOVAL	2. KSC TEST NUMBER V-21223	
		3. EFFECTIVITY SL-206 & SUBS AS-512 & SUBS
13. LOCATION VAB/LC-39 A,B	14. COMPUTER PRICE IDENTIFICATION KAO1(512 & SUBS); LA01 (206 & SUBS)	15. EST. TEST TIME 2 MEN - 1.0 HOURS
16. SUPPORT REQUIREMENTS 1. INTERSTAGE: CABLES MATED ON LAUNCH VEHICLE 2. OFF-COMPLEX: NONE 3. ON-COMPLEX: IBM QUALITY ASSURANCE IBM MECHANICAL IBM VEHICLE NETWORKS IBM GROUND NETWORKS (AUXILIARY POWER) IBM GROUND COMPUTER IBM DDAS IBM MEASURING E & I RECORDERS (TBC)		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION AESS IU ESE : 512 & SUBS 206 & SUBS AESS IU POWER ESE: 40M14490 40M67793 V-34017 40M13604 40M67707		
18. ITEM CONTINUATION BLOCK 5 CONTINUED: APPENDIX 2: IU STAGE POWER REMOVAL WITHOUT COMPUTER SUPPORT: THIS IS A NORMAL POWER DOWN EXCEPT THAT SUPPORT IS REQUIRED FROM THE ML/DCE PANEL TO TURN OFF CERTAIN MDO'S SPECIFIED IN THE PROCEDURE. APPENDIX 3: IU BUS READING SHEET: SELECTED RESISTANCE READINGS ARE MADE IN THE FOLLOWING ESE DISTRIBUTORS: X02-620A1, X02-622A1, X02-623A1 (S-150/207 ONLY), AND X01-664A2. INITIALS OF PERSONS MAKING READINGS AND DATE WILL BE RECORDED. DATA EVALUATION LIST: THIS SECTION IS PROVIDED TO RECORD MEASUREMENTS THAT WILL BE REVIEWED AT LEAST ONCE EACH WEEK, WHEN IU POWER IS APPLIED. THE DATA SOURCE, IDENTIFICATION NUMBER, DESCRIPTION, REMARKS, CAP/TPR NUMBER, AND INITIALS AND DATE WILL BE RECORDED AND REVIEWED FOR TREND EVALUATION. CONFIGURATION: VEHICLE MUST BE STACKED.		

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APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET (CONTINUATION SHEET)			PAGE <u>3</u> OF <u>3</u>	
1. TEST TITLE			2. KSC TEST NUMBER	
IU POWER APPLICATION/REMOVAL			V-21223	
			3. EFFECTIVITY SL-206 & SUBS AS-512 & SUBS	
ITEM CONTINUATION				
REV	DATE	REASON	CONT. APPVL	KSC APPVL
A	03-04-68	MODIFY BLOCK 5	S/G.E. LECKIE	S/L.R. DAVIS
B	05-17-68	MODIFY BLOCK 5	S/G.E. LECKIE	S/L.R. DAVIS
C	05-27-68	MODIFY BLOCK 5	S/G.E. LECKIE	S/L.R. DAVIS
D	07-15-70	MODIFY BLOCK 5	S/D.E. SCHMIDT	S/L.R. DAVIS
E	02-05-71	MODIFY BLOCKS 5 AND 15	S/G.E. LECKIE	S/L.R. DAVIS
F	08-15-71	COMPLETE REWRITE	<i>J.E. Leckie</i> 3/23/71	<i>L.R. Davis</i> 9-10-71
G	03/01/72	MODIFY BLOCKS 3,4,5,13,14,16 AND 17	<i>J.E. Leckie</i> 4/4/72	<i>L.R. Davis</i>
H	04/20/73	REVISE BLOCK 18	<i>J.E. Leckie</i> 4/23/73	<i>L.R. Davis</i>
I	06-18-74	REVISE MSFC REQUIREMENTS	<i>J.E. Leckie</i> 7-4-74	<i>L.R. Davis</i>



KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE SWITCH SELECTOR VEHICLE TEST		2. KSC TEST NUMBER V-21255
		3. EFFECTIVE DATES AS-512 & SUBS SL-206 & SUBS
4. TEST OBJECTIVES  THE OBJECTIVE OF THIS TEST IS TO VERIFY THE PROPER OPERATION OF THE SWITCH SELECTOR.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS PROCEDURE VERIFIES PROPER OPERATION OF THE SWITCH SELECTOR WHEN CONNECTED IN FLIGHT CONFIGURATION BY ISSUING ADDRESSES AND COMPLEMENT ADDRESSES. END ITEMS OF ACTIVE SWITCH SELECTOR CHANNELS ARE VERIFIED BY MONITORING VEHICLE AND GROUND DISCRETES.  THE IU WILL BE CONNECTED PER: CID 79091XX AS-511 AND SUBS CID 79105XX SL-206 AND SUBS  THE FOLLOWING SYSTEMS WILL BE POWERED OFF:  1. FLIGHT COMPUTER 2. STABILIZER 3. RF   PHASE: III, IV, V, VI  TEST REQUIREMENTS: MSFC: TM-411-001-2H 13.1A 1.1.5 13.2.1.1.9 13.2.1.2.16		
6. REV. DATE	REASON	7. DATE
5/13/74	REVISE MSFC REQUIREMENTS	1-10-74
3/8/72	REVISED BLOCKS 3, 5, AND 13	4/1/72
11/23/71	REVISED BLOCK 5 & 16	12/5/71
3/02/71	CHANGE PREFIX FROM "IV" TO "V"; REVISE BLK 15	
7/13/70	REVISE BLOCK 1 & 5	
6/10/70	REVISED BLOCKS 1,3,5,13,16, & 17	
8. CONTRACTOR APPROVAL S/O. C. PEURUNG		9. DATE SEPTEMBER 20, 1967
10. NASA APPROVAL S/O. K. DAVIDSON		11. ORGANIZATION LV-GDC-25
		12. APPROVAL DATE OCTOBER 21, 1967

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE SWITCH SELECTOR VEHICLE TEST		2. KSC TEST NUMBER V-21255
		3. EFFECTIVE DATES AS-512 & SUBS SL-206 & SUBS
13. LOCATION VAB/LCC 39A,B.	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 11 MEN -- 15 MINUTES E
16. SUPPORT REQUIREMENTS  INTERSTAGE: PRIOR TO ESE/GSE TEST (V-20025), NONE. AFTER PERFORMANCE OF ESE/GSE TEST: S/C, S-1C  OFF-COMPLEX: NONE  ON-COMPLEX: IBM QUALITY ASSURANCE IBM VEHICLE NETWORKS IBM MECHANICAL IBM EDS IBM MEASURING IBM FLIGHT CONTROL		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION IU ELECTRICAL SCHEMATIC 79101 XX-AS-5XX AND SUBS SL-206 AND SUBS		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE  ELECTRICAL BONDING OF COMPONENTS		2. KSC TEST NUMBER V-21478	
4. TEST OBJECTIVES  TO MEASURE AND RECORD DC RESISTANCE READINGS BETWEEN MOUNTED COMPONENTS AND A SINGLE UMBILICAL GROUND TO ENSURE PROPER ELECTRICAL BONDING. BONDING BETWEEN STAGES S1B/CAS/10 AND SC/FAS/10 WILL ALSO BE MEASURED.		3. EFFECTIVITY AS-206 & SUBS AS-511 & SUBS	
5. TEST DESCRIPTION ON EQUIPMENT STATUS CONFIGURATION (REPLACES IV-21250)  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  DC RESISTANCE MEASUREMENTS WILL BE MADE FROM AN UMBILICAL GROUND TO INDIVIDUAL FLIGHT COMPONENTS USING A PRECISION RESISTANCE BRIDGE. EACH COMPONENT WILL BE THE FLIGHT ITEM, PROPERLY MOUNTED. IN ADDITION, THE TWO IU STAGE INTERFACES WILL ALSO BE MEASURED FOR PROPER BONDING. REFERENCE SPECIFICATION NO. 7915798. FLIGHT COMPONENTS WHICH ARE INSTALLED OR REINSTALLED SUBSEQUENT TO THE PERFORMANCE OF THIS TEST WILL BE MEASURED ON AN INDIVIDUAL BASIS AS SOON AS PRACTICAL FOLLOWING INSTALLATION.  CONFIGURATION: N/A   PHASE: <u>IA, II, III, IV, V, VI</u>  <div style="text-align: center;"><u>TEST REQUIREMENTS</u> SL-206 &amp; SUBS MSFC: TM-011-001-2H MSFC: 7921601 1.3.5.2 0.3.4.0.2 1.3.5.3</div>			
6. REVISIONS		7. APPROVALS	
1. 10/74 REVISE MSFC REQUIREMENTS		1. 10/74	
2. 11/77 REVISE MSFC REQUIREMENTS		2. 11/77	
3. 11/77 REVISED BLOCKS 4,5 & 17		3. 11/77	
4. 11/77 REVISE BLOCKS 5 AND 16		4. 11/77	
8. REV	DATE	REASON	DATE
9. KSC APPROVAL	10. ORGANIZATION	11. DATE	12. APPROVAL DATE
	IBM - K/S	4/12/71	4/12/71
	AL-600		

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE  ELECTRICAL BONDING OF COMPONENTS		2. KSC TEST NUMBER V-21478	
13. LOCATION VAB, LC39A,B,C		14. COMPUTER PROC. IDENTIFICATION N/A	
15. EST. TEST TIME 2 MEN -- 5 HOURS EA		3. EFFECTIVITY AS-206 & SUBS AS-511 & SUBS	
16. SUPPORT REQUIREMENTS  INTERSTAGE: N/A  OFF-COMPLEX: N/A  ON-COMPLEX: FACILITY OIS IBM QUALITY IBM VEHICLE NETWORKS			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  7921601 7916404A			
18. ITEM CONTINUATION			



KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1 TEST TITLE IU BATTERY ACTIVATION, MONITORING AND DISCHARGE		2 KSC TEST NUMBER V-21479
3 EFFECTIVITY SL-206 & SUBS AS-510 & SUBS		
4 TEST OBJECTIVES TO ACTIVATE, LOAD TEST, AND ELECTRICALLY CHECK IU BATTERIES. TO MONITOR VOLTAGE, CURRENT AND TEMPERATURE OF IU BATTERIES IN THE LAB AND AFTER INSTALLATION IN THE VEHICLE. TO DISCHARGE IU FLIGHT BATTERIES USED FOR TESTING, ACTIVATED AS SPARE, & ACTIVATED FOR FLIGHT BUT NOT USED.		
5 TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION (REPLACES IV-21254) THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. THE FLIGHT BATTERY IS ACTIVATED BY THE ADDITION OF ELECTROLYTE. FOR BUSES 6D10, 6D30, 6D40 AND SPARE ACTIVATE 19 CELLS; 6D20, 18 CELLS. THE CELL VOLTAGES ARE CHECKED. THE FLIGHT AVAILABILITY IS CHECKED. A PRESSURE TEST IS PERFORMED. THE BATTERY IS LOAD TESTED TO THE EXPECTED CURRENT. THE PROPER BLIND PLUG IS SELECTED TO PROVIDE THE PROPER VOLTAGE AT EXPECTED LOAD CURRENT. THE VOLTAGE, CURRENT AND TEMPERATURE (IF TEMPERATURE MEASUREMENTS ARE AVAILABLE) WILL BE MONITORED AND RECORDED EVERY THIRTY (30) MINUTES AFTER BATTERIES ARE INSTALLED. INSERT LOAD BANK TO BATTERY. SET LOAD BANK TO DESIRED LOAD AND DISCHARGE BATTERY. VOLTAGE, CURRENT, TEMPERATURE AND TIME WILL BE RECORDED. AFTER THE BATTERY IS DISCHARGED, INSERT JUMPER TO POSITIVE AND NEGATIVE TERMINALS. FORTY-EIGHT (48) HOURS "OFF-LOADING" IS MANDATORY PRIOR TO PLACING BATTERY IN SEALED CONTAINER FOR SHIPMENT. ACTIVATION WILL BE PERFORMED DURING THE MINUS COUNT AS CALLED OUT IN THE INTEGRATED TEST PROCEDURES AND LAUNCH COUNTDOWN PROCEDURE. PAGE: 17, 21		
6 TEST REQUIREMENTS AS-206 & SUBS MSFC: IM-011-001-2H 14.0.4.3 MSFC: 7921601 0.3.4.1.0.1 0.3.4.1.1.1 0.3.4.1.1.1.1 0.3.4.1.1.1.2		
7 REVISIONS		8 APPROVALS
1. 10/17/70 REVISE MSFC REQUIREMENTS		S/G. LECKIE S/L. DAVIS
2. 11/03/70 REVISE BLOCKS 5, 17, 18		S/G. LECKIE S/L. DAVIS
3. 11/11/70 REVISE MSFC REQUIREMENTS		S/G. LECKIE S/L. DAVIS
4. 11/17/70 REVISE BLOCK 5		S/G. LECKIE S/L. DAVIS
9 REVISIONS		
10 REVISION	REASON	DATE
10.1	IBM - K73	4/23/71
10.2	LV-GXC-25	4/26/71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1 TEST TITLE IU BATTERY ACTIVATION, MONITORING AND DISCHARGE		2 KSC TEST NUMBER V-21479
3 EFFECTIVITY SL-206 & SUBS AS-510 & SUBS		
13 LOCATION VAB, 25E18	14 COMPUTER PROC. IDENTIFICATION N/A	15 EST. TEST TIME 7 MEN - 9 HOURS
16 SUPPORT REQUIREMENTS INTERSTAGE: N/A OFF-COMPLEX: IBM QA VEHICLE NETWORKS NASA REPRESENTATIVE BOEING BATTERY CONSOLE REPRESENTATIVE ON-COMPLEX: N/A		
17 OTHER APPLICABLE REFERENCE DOCUMENTATION 1. R-ASTR-E: OPERATIONAL MANUAL FOR FLIGHT BATTERY TEST CONSOLE, ASTRONICS LABS 2. ACTIVATION, TEST, AND HANDLING PROCEDURE FOR MAP 4240 BATTERIES, ASTRONICS LABS 3. IBM DRAWING 7915893-001, BATTERY ASSEMBLY (UNACTIVATED), AS-206 & SUBS		
18 ITEM CONTINUATION BLOCK 17 (CONTINUED) 4. IBM DRAWING 7915893-009, BATTERY ASSEMBLY (UNACTIVATED), SL-513, 515 5. IBM DRAWING 40Z20780-001, BATTERY ASSEMBLY (ACTIVATED), AS-206 & SUBS 6. IBM DRAWING 40Z20780-009, BATTERY ASSEMBLY (ACTIVATED), SL-513, 515 7. IBM PROCEDURE 7915666, BATTERY SHIPPING AND HANDLING		

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE  Test Procedure - Reworked Wire Harness		2. KSC TEST NUMBER V-21496	
		3. EFFECTIVITY 511 & Subs; 206 & Subs	
4. TEST OBJECTIVES  To verify the integrity of stage harnesses affected by modification or repair after stage arrival at KSC.			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  This TCP provides the method for isolation resistance and continuity testing of stage harnesses after rework. The TCP will be activated upon stage arrival at KSC and will remain open until just prior to launch. A continuous data log will document each harness as it is tested and the reason for test.  The TCP provides for megger testing of a wire harness only by PCR to the TCP, upon approval of the specific test requirement by MDAC Electronics Engineering and LVO-GDC.			
MSFC T.R. Not Applicable			
6. REV. 1 DATE		REASON	
7. CONTRACTOR APPROVAL <i>R. S. Marshall</i>		8. ORGANIZATION MDAC	
9. DATE 9-8-71		10. APPROVAL DATE 9/11/71	
11. NASA KSC APPROVAL <i>Carl Jones</i>		12. ORGANIZATION LV-GDC-23	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE  Test Procedure - Reworked Wire Harness		2. NSC TEST NUMBER V-21496
13. LOCATION LC 39	14. COMPUTER PROC. IDENTIFICATION N/A	3. EFFECTIVITY 511 & Subs; 206 & Subs. 15. EST. TEST TIME
16. SUPPORT REQUIREMENTS		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		



KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
VEHICLE NETWORKS PRE-POWER CHECKS		KSC TEST NUMBER V-21497	
		EFFECTIVITY SL-206 & SUBS AS-512 & SUBS	
<p>THE PURPOSE OF THIS TEST IS TO PROVIDE A SYSTEMATIC METHOD FOR RESTORING THE IU ESE SYSTEM TO PRE-POWER STATUS AFTER A VEHICLE LAUNCH.</p>			
<p>THIS TEST CONTAINS SEVEN (7) PARTS</p>			
<p><u>PART 1 - DOCUMENTATION, EQUIPMENT AND POWER REQUIREMENTS</u></p> <p>Documentation, equipment and Power Requirements are defined.</p>			
<p><u>PART 2 - POST LAUNCH OPERATIONS</u></p> <p>Distributor Integrity Seals are verified. Patchboards are removed and Pins are inspected. Distributor Paddle Pins are inspected and cleaned. Relay and Diode Modules are removed and tested. Circuit Breakers are tested at discretion of Engineering and Reliability. Time Delay Relays are checked. Recover Distributor Taper Pins are pull tested. AT Power Distributor is inspected. Power Contactors are checked. Umbilical Cables are inspected for damage and usable Safety Wire Holes.</p>			
<p><u>PART 3 - TEST BOX VALIDATION</u></p> <p>IO-1B AND IO/SC INTERFACE Fuse Boxes and Adapter Cables are continuity and megger checked. Fuses are verified. Portable SAT Distributor is continuity checked. Battery Substitute Assemblies are continuity checked and pressure tested. Test box Drawings are verified for discrepancies V.S. hardware changes.</p>			
<p><u>PART 4 - CONTINUITY AND MEGGER CHECK OF CABLES</u></p> <p>IO-1B and ESE Cables are continuity and megger checked.</p>			
1. DELETE MSFC REQUIREMENTS		11/10/71	
2. REVISE BLOCKS 3, 13 AND 18		11/10/71	
REASON		Contractor Approval	
IBM/K73		11/10/71	
APPROVAL DATE		11/10/71	

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET 21		PAGE <u>2</u> OF <u>2</u>	
TEST TITLE IU VEHICLE NETWORKS PRE-POWER CHECKS		KSC TEST NUMBER V-21497	
		EFFECTIVITY SL-206 & SUBS AS-512 & SUBS	
13. LOCATION VAB/LC-39 A, B	14. COMPLETION IDENTIFICATION N/A	15. EST. TEST TIME 4 MEN - 52 HOURS	
16. SUPPORT REQUIREMENTS			
INTERSTAGE: NONE			
OFF COMPLEX: NONE			
ON COMPLEX: IBM QUALITY ASSURANCE OIS			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			
<p><u>PART 5 - PRE-INTERCONNECT CONTINUITY CHECKS</u></p> <p>IU ESE Cables are disconnected in preparation for resistance readings.</p>			
<p><u>PART 6 - INTERCONNECT CONTINUITY CHECKS</u></p> <p>Resistance Readings are made from the ESE Distributors to the vehicle end of the Umbilical Cables.</p>			
<p><u>PART 7 - POST INTERCONNECT CONTINUITY AND MEGGER CHECK OPERATIONS</u></p> <p>Distributors are recabled. Dust Caps are placed on spare distributor jacks. Patchboards are reinstalled. Relay and Diode Modules are reinstalled. 1137W133, 6281W1, 6281W15, 1244-201W1 are continuity checked.</p>			
<p><u>CONFIGURATION:</u> Equipment in place, IU Ground Power OFF.</p>			
<p><u>PHASE:</u> 1A, 1B</p>			
<p><u>TEST REQUIREMENTS:</u></p> <p>N/A</p>			



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KSC OPERATIONS		PAGE <u>1</u> OF <u>2</u>	
APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET			
1. TEST TITLE		2. KSC TEST NUMBER	
LOW BAY POWER SETUP		V-21535	
		3. EFFECTIVITY	
		206 & SUBS	
4. TEST OBJECTIVES			
1) VEHICLE BUS RESISTANCE MEASUREMENTS 2) CONNECT THE UMBILICALS 3) TO APPLY GROUND AND STAGE POWER 4) VERIFY PROPER SWITCH SELECTOR OPERATION 5) RESET ALL STAGE SWITCH SELECTOR FUNCTIONS 6) REMOVE STAGE AND GROUND POWER			
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION			
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
THIS TEST CONSISTS OF THE FOLLOWING:			
1) <u>PREPARATIONS</u>			
A. VEHICLE BUS RESISTANCE MEASUREMENTS WITH UMBILICALS DISCONNECTED. B. CONNECT THE ELECTRICAL UMBILICALS. C. CIRCUIT BREAKER AND PANEL SWITCH POSITIONS ARE VERIFIED. D. BUS RESISTANCES ARE VERIFIED NORMAL.			
2) <u>POWER-UP</u>			
A. GROUND POWER IS APPLIED AND ALL EXPECTED TALKBACKS VERIFIED. B. STAGE POWER IS APPLIED WITH THE EXCEPTION OF SEQUENCER POWER, AND ALL EXPECTED TALKBACKS ARE VERIFIED.			
3) <u>SWITCH SELECTOR TESTS</u>			
A. PROPER SWITCH SELECTOR OPERATION IS VERIFIED. B. ALL STAGE SWITCH SELECTOR FUNCTIONS ARE RESET. C. SEQUENCER POWER IS APPLIED.			
4) <u>POWER OFF</u>			
A. STAGE AND GROUND POWER IS REMOVED IN A SEQUENCE OPPOSITE TO THAT ABOVE. B. AFTER COMPLETION OF LOW BAY C/O THE UMBILICALS ARE DISCONNECTED.			
REV. DATE		REASON	
CONTRACTOR APPROVAL		B. ORGANIZATION	
C. S. Jeyami		MCDONNELL DOUGLAS	
NASA/KSC APPROVAL		11. ORGANIZATION	
D. Jeyami		LV-GDC-23	
		9. DATE	
		1-31-72	
		12. APPROVAL DATE	
		3-1-72	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
LOW BAY POWER SETUP		V-21535	
		3. EFFECTIVITY	
		206 & SUBS	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME	
LOW BAY	NONE	1 HOUR	
16. SUPPORT REQUIREMENTS			
SID-21535-D			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			
KSC TEST SPEC AND CRITERIA REQUIREMENTS			
NOT APPLICABLE			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE  BATTERY SUBSTITUTE VERIFICATION (S-IVB/S-IB)		2. KSC TEST NUMBER V-21535	
3. EFFECTIVITY GSE			
4. TEST OBJECTIVES  TO VERIFY ELECTRICAL CIRCUITRY AND CALIBRATION OF ELECTRICAL SENSING DEVICES WITHIN FOUR BATTERY SUBSTITUTE ASSEMBLIES USED ON SIVB STAGE.			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THE TEST CONTAINS THE FOLLOWING ELEMENTS: A. VERIFICATION OF ELECTRICAL CONSOLE OPERATION B. RESISTANCE CHECKS C. T/M VOLTAGE TEST D. T/M CALIBRATION CHECK E. T/M CURRENT TEST F. T/M TEMPERATURE AND HEATER TEST G. PRESSURE TEST  CONFIGURATION: LABORATORY TEST			
6. REV. DATE 5-26-74		REVISIONS TO INCLUDE THE TWO UNIT, AFT BUS 2 BATTERY SUBSTITUTE UNITS	
7. CONTRACTOR APPROVAL G. S. Ikegami		8. ORGANIZATION MCDONNELL DOUGLAS	
9. NASA-KSC APPROVAL D. H. Hines		10. APPROVAL DATE 2-1-72	

ASC FORM 22-1 (7/67)

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE  BATTERY SUBSTITUTE VERIFICATION (S-IVB/S-IB)		2. KSC TEST NUMBER V-21535	
3. EFFECTIVITY GSE			
13. LOCATION VAB/25B18	14. COMPUTER PROC. IDENTIFICATION NONE	15. EST. TEST TIME 24 HOURS	
16. SUPPORT REQUIREMENTS  BATTERY CHECKOUT CONSOLE 40M22080			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 40M71361 BATTERY SUBSTITUTE S-IVB, S-1B, FWD 2 40M67493 BATTERY SUBSTITUTE S-IVB, S-1B, FWD 1 40M67501 BATTERY SUBSTITUTE S-IVB, S-1B, AFT 2			
18. ITEM CONTINUATION 17.) Continued - 40M71360 BATTERY SUBSTITUTE S-IVB, S-1B, AFT 1  <u>KSC TEST SPEC AND CRITERIA REQUIREMENTS</u>  NOT APPLICABLE			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
VEHICLE INTERFACE COMPATIBILITY TEST	V-21537	
	3. EFFECTIVITY	
	206 & SUBS	
4. TEST OBJECTIVES		
<p>THE OBJECTIVE OF THIS TEST IS TO VERIFY THE COMPATIBILITY OF THE S-IVB INTERFACE WIRING WITH I.U. AND S-IB. INCLUDED IN CHECKOUT ARE LOX AND LH TANK COMPONENTS, EBW PULSE SENSORS AND RANGE SAFETY SAFING PLUGS.</p>		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION		
<p>THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>THIS TEST CONSISTS OF THE FOLLOWING:</p> <ol style="list-style-type: none"> <li>THROUGH STAGE WIRING (FROM FORWARD TO AFT INTERFACE) CONTINUITY IS VERIFIED. THE IMPEDANCE OF EACH PIN ON EACH INTERFACE CONNECTOR IS MEASURED WITH REFERENCE TO S-IVB GROUND. THE MEASUREMENTS ARE COMPARED TO EXPECTED VALUES.</li> <li>INSULATION RESISTANCE AND CAPACITANCE OF THE P.U. PROBE IS VERIFIED.</li> <li>RESISTANCE OF THE LOX AND LH2 CHILLDOWN PUMPS THROUGH THE POWER INPUT CABLE IS VERIFIED.</li> <li>RESISTANCE OF THE ECS ENVIRONMENTAL CONTROL TEMPERATURE ASSEMBLIES IS VERIFIED.</li> <li>RESISTANCE OF THE EBW FIRING UNITS THROUGH THE OUTPUT CABLE IS VERIFIED.</li> <li>THE CAPACITANCE OF THE LOX AND LH2 DEPLETION AND LEVEL SENSORS IS VERIFIED.</li> <li>RANGE SAFETY SAFING PLUGS ARE REMOVED, CHECKED PER TCP V-21225 AND REINSTALLED.</li> <li>EBW PULSE SENSORS ARE REMOVED, CHECKED PER TCP V-21482 AND REINSTALLED.</li> <li>CIRCUITS NOT FUNCTIONALLY CHECKED DURING SUBSYSTEM TESTING ARE IMPEDANCE CHECKED.</li> <li>BATTERY FIT CHECKS ARE PERFORMED.</li> <li>INSURE CORRECT FUNCTIONAL TERMINATION OF LH AND LOX CONTROL AND INSTRUMENTATION LEVEL SENSORS.</li> </ol>		
<p>A 07-23-74 INSURE CORRECT TERMINATION OF CONTROL INSTRUMENTATION LEVEL SENSORS.</p>		
6. DATE	REASON	Contractor Approval
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
<i>G. S. Williams</i>	MCDONNELL DOUGLAS	1-31-72
10. NASA/KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
<i>Erin Jones</i>	LV-GDC-23	2-1-72

KSC FORM 23-338 (7/67)

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
VEHICLE INTERFACE COMPATIBILITY	V-21537	
	3. EFFECTIVITY	
	206 & SUBS	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME
LOW BAY	NONE	16 HOURS
16. SUPPORT REQUIREMENTS		
NONE		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
<p>V-21225 R/S CONTROLLER V-21482 EBW PULSE SENSOR V-34013 BATTERY FIT CHECK</p>		
18. ITEM CONTINUATION		
<p>CONFIGURATION: THE S-IVB WILL BE LOCATED IN LOW BAY AND UMBILICALS WILL NOT BE MATED.</p> <p><u>KSC TEST SPEC &amp; CRITERIA REQUIREMENTS (1887621)</u></p> <p>0.2.2.4.4.1 0.2.2.4.4.2 0.2.2.4.4.3 0.2.2.4.4.4 0.2.2.4.4.5 0.2.2.4.4.6 0.2.2.4.4.7 0.2.2.4.4.8 0.2.2.4.4.9</p>		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE SIVB ELECTRICAL SUBSYSTEM CHECKOUT (AUTOMATIC)		2. KSC TEST NUMBER V-21538	
4. TEST OBJECTIVES THE OBJECTIVE OF THIS PROCEDURE IS TO VERIFY THE STAGE POWER DISTRIBUTION CIRCUITS, STAGE CONTROL SWITCHING CIRCUITS, AND ASSOCIATED ESE CIRCUITS. THE TCP VERIFIES THE NECESSARY PREPARATIONS FOR EXECUTION OF AUTO PROGRAMS, EAPD (POWER DISTRIBUTION), EASR (RANGE SAFETY SUBS), EABW (EBW SUBS), EAPU (P.U. SUBSYSTEM), EAPX (POWER TRANSFER).		3. EFFECTIVITY 207 & SUBS	
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. 1. THE C/D INVERTERS ARE FUNCTIONALLY TESTED WITH LOAD SIMULATORS. 2. STATIC CURRENT LOADS OF MAJOR SUB-ASSEMBLIES AND COMPONENTS ARE VERIFIED. 3. T/M SYSTEMS ARE ACTIVATED (CLOSED LOOP) AND R.F. SILENCE IS VERIFIED. 4. STAGE LOGIC CIRCUITS AND INTERLOCKS ARE FUNCTIONALLY CHECKED. 5. VEHICLE POWER TRANSFER WITH ASSOCIATED CONTROL CIRCUITS IS VERIFIED. 6. SWITCH SELECTOR COMPLIMENT CODES ARE ISSUED AND THE PROPER RESPONSES VERIFIED. 7. DEPLETION SENSOR LOGIC CHECKS ARE VERIFIED. 8. EBW AND RANGE SAFETY PULSE SENSOR SELF TEST CIRCUIT IS VERIFIED. 9. THE EBW AND RANGE SAFETY FIRING UNITS CHARGING TIMES AND VOLTAGE LEVELS ARE VERIFIED. 10. EBW BLEED CIRCUITS ARE VERIFIED. 11. ALL FIRING UNITS ARE CHARGED, FIRE COMMANDS ARE ISSUED, AND THE PROPER PULSE SENSOR RESPONSE IS VERIFIED. 12. THE RANGE SAFETY ARM AND ECO, PROPELLANT DISPERSION, AND SYSTEMS OFF COMMANDS ARE ISSUED AND PROPER RESPONSES ARE VERIFIED. 13. THE RANGE SAFETY POWER INTERNAL/EXTERNAL CIRCUITS ARE VERIFIED. 14. THE RANGE SAFETY SAFE AND ARM DEVICE IS VERIFIED. 15. PROPELLANT UTILIZATION SUB-SYSTEM IS VERIFIED.			
6. REV.	DATE	REASON	APPROVAL
A	12-4-72	UPDATE FOR TEST SPEC & CRITERIA REQUIREMENTS	<i>[Signature]</i>
7. CONTRACTOR APPROVAL S/G. S. IKEGAMI		8. ORGANIZATION MCDONNELL DOUGLAS	9. DATE 1-31-72
10. NASA KSC APPROVAL S/D. R. JONES		11. ORGANIZATION LV-GDC-23	12. APPROVAL DATE 2-1-72

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>																																															
1. TEST TITLE SIVB ELECTRICAL SUBSYSTEM CHECKOUT (AUTOMATIC)		2. KSC TEST NUMBER V-21538																																															
13. LOCATION LC 39		14. COMPUTER PROC. IDENTIFICATION EAPD, EASR, EABW, EAPU, EAPX																																															
15. SUPPORT REQUIREMENTS RD-21401		16. EST. TEST TIME 4 HOURS																																															
17. OTHER APPLICABLE REFERENCE DOCUMENTATION V-21262 SIVB POWER SETUP PROCEDURE																																																	
18. ITEM CONTINUATION KSC TEST SPEC & CRITERIA REQMS (1B86721)																																																	
<table> <tbody> <tr><td>0.2.2.1.1.1</td><td>0.2.2.1.2.2.5</td></tr> <tr><td>0.2.2.1.1.2</td><td>0.2.2.1.3.1</td></tr> <tr><td>0.2.2.1.1.3</td><td>0.2.2.1.4.0</td></tr> <tr><td>0.2.2.1.1.4</td><td>0.2.2.3.1.1</td></tr> <tr><td>0.2.2.1.1.5</td><td>0.2.2.3.1.2</td></tr> <tr><td>0.2.2.1.1.6</td><td>0.2.2.3.2.1</td></tr> <tr><td>0.2.2.1.1.7</td><td>0.2.2.3.2.2</td></tr> <tr><td>0.2.2.1.1.8</td><td>0.2.2.3.2.3</td></tr> <tr><td>0.2.2.1.1.9</td><td>0.2.2.3.2.4</td></tr> <tr><td>0.2.2.1.1.10</td><td>0.2.2.3.2.5</td></tr> <tr><td>0.2.2.1.1.11</td><td>0.2.2.5.2.1.1</td></tr> <tr><td>0.2.2.1.1.13</td><td>0.2.2.5.2.1.2</td></tr> <tr><td>0.2.2.1.1.16</td><td>0.2.2.5.2.2.1</td></tr> <tr><td>0.2.2.1.2.1.1</td><td>0.2.2.5.2.2.2</td></tr> <tr><td>0.2.2.1.2.1.2</td><td>0.2.2.5.2.3</td></tr> <tr><td>0.2.2.1.2.1.3</td><td>0.2.2.5.3.1</td></tr> <tr><td>0.2.2.1.2.1.4</td><td>0.2.2.5.3.2</td></tr> <tr><td>0.2.2.1.2.1.5</td><td></td></tr> <tr><td>0.2.2.1.2.1.6</td><td></td></tr> <tr><td>0.2.2.1.2.2.1</td><td></td></tr> <tr><td>0.2.2.1.2.2.2</td><td></td></tr> <tr><td>0.2.2.1.2.2.3</td><td></td></tr> <tr><td>0.2.2.1.2.2.4</td><td></td></tr> </tbody> </table>				0.2.2.1.1.1	0.2.2.1.2.2.5	0.2.2.1.1.2	0.2.2.1.3.1	0.2.2.1.1.3	0.2.2.1.4.0	0.2.2.1.1.4	0.2.2.3.1.1	0.2.2.1.1.5	0.2.2.3.1.2	0.2.2.1.1.6	0.2.2.3.2.1	0.2.2.1.1.7	0.2.2.3.2.2	0.2.2.1.1.8	0.2.2.3.2.3	0.2.2.1.1.9	0.2.2.3.2.4	0.2.2.1.1.10	0.2.2.3.2.5	0.2.2.1.1.11	0.2.2.5.2.1.1	0.2.2.1.1.13	0.2.2.5.2.1.2	0.2.2.1.1.16	0.2.2.5.2.2.1	0.2.2.1.2.1.1	0.2.2.5.2.2.2	0.2.2.1.2.1.2	0.2.2.5.2.3	0.2.2.1.2.1.3	0.2.2.5.3.1	0.2.2.1.2.1.4	0.2.2.5.3.2	0.2.2.1.2.1.5		0.2.2.1.2.1.6		0.2.2.1.2.2.1		0.2.2.1.2.2.2		0.2.2.1.2.2.3		0.2.2.1.2.2.4	
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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1 TEST TITLE INDUCED VOLTAGE DETECTORS, VEHICLE & GROUND; INSTALLATION, OPERATION AND MAINTENANCE		2 KSC TEST NUMBER V-21564
3 EFFECTIVITY AS-215 SL-206 & SUBS		
4 TEST OBJECTIVES TO PROVIDE PROPER INSTRUCTION FOR INSTALLING, REMOVING, MAINTAINING AND OPERATING INDUCED VOLTAGE DETECTORS IN IU STAGE. TO PROVIDE OPERATING INSTRUCTIONS FOR SEPARATE VOLTAGE MONITORS INSTALLED ON 280' LEVEL OF MOBILE LAUNCHER.		
5 TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS PROCEDURE IS DIVIDED INTO TWO PARTS.  PART A PROVIDES FOLLOWING FOR STAGE DETECTORS:  1. CALIBRATION INSTRUCTIONS AND FREQUENCY 2. INSTALLATION INSTRUCTIONS 3. MAINTENANCE INSTRUCTIONS 4. OPERATING INSTRUCTIONS 5. REMOVAL INSTRUCTIONS  PART B PROVIDES FOLLOWING FOR GROUND DETECTORS:  OPERATING INSTRUCTIONS  SUPPORT REQUIREMENTS: NONE  CONFIGURATION: VEHICLE DETECTORS TO BE INSTALLED PRIOR TO TRANSFER TO PAD.   PHASES V AND VI   MSFC REQUIREMENTS: TM-011-001-2H 13.0.1.2		
6 REVISIONS 7. REVISE MSFC REQUIREMENTS		8 ORGANIZATION IBM/K73
9 DATE 9/20/72		10 APPROVAL [Signature]
11 ORGANIZATION KSC-BOC-25		12 APPROVAL DATE 9/21/72

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET 21		PAGE <u>2</u> OF <u>2</u>
1 TEST TITLE INDUCED VOLTAGE DETECTORS, VEHICLE & GROUND; INSTALLATION, OPERATION AND MAINTENANCE		2 KSC TEST NUMBER V-21564
3 EFFECTIVITY AS-215 SL-206 & SUBS		
4 LOCATION IU STAGE		5 COMPUTER IDENTIFICATION 2 MEN - 1 - CLR
6 ML 1, 2 & OR 3		
7 SUPPORT REQUIREMENTS  NONE		
8 OTHER APPLICABLE REFERENCE DOCUMENTATION 50M18360 - OPERATION AND CALIBRATION INSTRUCTIONS FOR THE INDUCED VOLTAGE DETECTORS (IVD)		
9 ITEM CONTINUATION		

KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE  LUT NETWORKS ML-1 PURGE VERIFICATION		2. KSC TEST NUMBER V-21565  3. EFFECTIVITY GSE	
4. TEST OBJECTIVES  TO VERIFY A POSITIVE PRESSURE WITHIN ALL PURGED ELECTRICAL ENCLOSURES THAT ARE THE RESPONSIBILITY OF THE LUT NETWORKS GROUP.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS PROCEDURE WILL BE ACCOMPLISHED BY:  1. SECURING AND SEALING ELECTRICAL ENCLOSURES TO FACILITATE POSITIVE PRESSURE BUILDUP WITHIN THE ENCLOSURE.  2. VERIFYING EXISTENCE OF SAID POSITIVE PRESSURE.  THE VERIFICATION WILL BE ACCOMPLISHED PRIOR TO EACH OF THE FOLLOWING MAJOR EVENTS:  1. MOVE TO PAD  2. HYPERGOLIC LOAD  3. CDDT  4. LAUNCH COUNTDOWN			
6. APPROVAL DATE REASON FOR APPROVAL J. L. McCroney		7. ORGANIZATION BATC 5-8730  8. DATE 10/6/72	
9. APPROVAL DATE REASON FOR APPROVAL J. P. Overstreet		10. ORGANIZATION LV-GDC-22  11. DATE 10/6/72	

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APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE  LUT NETWORKS ML-1 PURGE VERIFICATION		2. KSC TEST NUMBER V-21565  3. EFFECTIVITY GSE	
4. LOCATION ML-1		5. COMPUTER PROC. IDENTIFICATION N/A	
6. SUPPORT REQUIREMENTS  50 PSI GN <sub>2</sub> PURGE		7. EST. TEST TIME 24 HOURS	
8. APPLICABLE REFERENCE DOCUMENTATION			
9. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
MOBILE LAUNCHER PHASEDOWN ELECTRICAL	V-21572	
	3. EFFECTIVITY	
	GSE-LC 39-3	
4. TEST OBJECTIVES		
<p>The objective of this task is to place the Mobile Launcher in a downmode status and outline surveillance criteria.</p>		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION		
<p>THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>The following is a list of tasks to be performed:</p> <ol style="list-style-type: none"> <li>1. Inspect and check all ESE cables.</li> <li>2. Seal all cable connections and/or unconnected cable ends.</li> <li>3. Downmode mobile launcher equipment mounted in distributor racks.</li> <li>4. Downmode portable OAT cables and equipment. Transfer interchangeable items to other programs.</li> <li>5. Downmode all umbilical tower equipment on the 220, 240, &amp; 260 foot levels including pneumatic consoles, crossover junction boxes, and power distributor boxes.</li> <li>6. Establish surveillance plan and requirements.</li> </ol>		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL	8. ORGANIZATION	
/S/ W. J. HAMILTON	McDonnell Douglas	
9. DATE	11/17/72	
10. NASA-KSC APPROVAL	11. ORGANIZATION	
/S/ D. R. JONES	LV-GDC-23	
12. APPROVAL DATE	11/17/72	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
MOBILE LAUNCHER PHASEDOWN ELECTRICAL	V-21572	
	3. EFFECTIVITY	
	GSE LC 39-3	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME
ML #3	None	50 Hours
16. SUPPORT REQUIREMENTS		
None		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
<p>MDAC - DFS's, CID's 40ML2377, 40ML2384 Main Equipment Index Drawing 40M57101</p>		
18. ITEM CONTINUATION		
<p><u>Configuration</u></p> <p>Post 512 Launch, No S-IVB Vehicle</p> <p><u>NASA-KSC Authorization</u></p> <p>LV-TMO/330-72-MDAC-36, August 8, 1972</p>		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE DEE-6C PERIODIC PREVENTIVE MAINTENANCE AND ELECTRONIC CHECKS AND/OR ADJUSTMENTS		2. KSC TEST NUMBER V- 21574
		3. EFFECTIVITY GSE - LC39
4. TEST OBJECTIVES THE OBJECTIVE OF THIS PROCEDURE IS TO PROVIDE A SYSTEM OF PERIODIC CHECKS AND ALIGN- MENTS OF THE DEE-6C SYSTEM THAT WILL REDUCE THE NUMBER OF DEE-6 SYSTEM FAILURES DURING VEHICLE SUPPORT TO A MINIMUM.		
5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS TEST CONSISTS OF MULTIPLE DEE-6 SUBSYSTEM CHECKS OR MAINTENANCE TASKS. PARTS II, III, IV AND VI ARE PERFORMED PERIODICALLY - BI-WEEKLY (EVERY TWO WEEKS), QUARTERLY, SEMI-ANNUALLY AND ANNUALLY.  PART V CONSISTS OF ELECTRONIC CHECKS AND/OR ADJUSTMENTS. PART V IS NOT PERIODICALLY SCHEDULED. NORMALLY, APPROPRIATE SECTIONS OF PART V ARE PERFORMED AS A RESULT OF A MAINTENANCE DIAGNOSTIC PROGRAM DETECTING AN ABNORMAL SITUATION OR OUT OF TOLERANCE CONDITION WITHIN THE SPECIFIED SUBSYSTEM UNDER TEST. SECTIONS OF PART V WILL ALSO BE PERFORMED IN CONJUNCTION WITH VEHICLE EVENTS, SUCH AS SV/ML PAD TRANSFER.  ANY PERIODICALLY SCHEDULED PART OR ITS SECTIONS MAY BE PERFORMED AT A GREATER FRE- QUENCY THAN SPECIFIED WITH SYSTEMS ENGINEER AND LVO-ENG CONCURRENCE. ANY SECTION OF PART V MAY BE PERFORMED AS REQUIRED WITH SYSTEMS ENGINEER AND LVO-ENGINEERING CONCURRENCE.  CONFIGURATION: N/A  PHASE: N/A  TEST REQUIREMENTS MSFC: N/A		
A 1-21-73 REVISED BLOCK 5		
6. REV. DATE	REASON	Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL <i>R. J. Heston</i>	8. ORGANIZATION IBM-M82	9. DATE 1/26/73
10. NASA KSC APPROVAL <i>R. J. Heston</i>	11. ORGANIZATION LC-CSC-27	12. APPROVAL DATE 1/26/73

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE DEE-6C PERIODIC PREVENTIVE MAINTENANCE AND ELECTRONIC CHECKS AND/OR ADJUSTMENTS		2. KSC TEST NUMBER V-21574
		3. EFFECTIVITY GSE - LC39
13. LOCATION LC-39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 2 MEN, AS REQUIRED
16. SUPPORT REQUIREMENTS  INTERSTAGE: NONE  OFF-COMPLEX: NONE  ON-COMPLEX: OIS A/C POWER QUALITY ASSURANCE		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  N/A		
18. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
S-1B STAGE EBW PULSE SENSOR CHECKOUT PROCEDURE		V-21582
		207 & Subs
<p>TO VERIFY THE FUNCTIONAL OPERATION OF THE PULSE SENSORS USED IN THE RETROCKET, SEPARATION, AND PROPELLANT DISPERSION SYSTEMS.</p> <p>DESCRIPTION: EQUIPMENT STATUS IDENTIFICATION</p> <p>THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>Verify that the EBW pulse sensors operate at the proper voltage level. Each pulse sensor will be checked to insure that it will accept a 2000 VDC pulse for ten consecutive firings (Fire Test) and that it will reject an 1800 VDC pulse for ten consecutive firings (No-Fire Test). If a pulse sensor cannot meet these criteria, it will be adjusted as required and the Fire &amp; No-Fire Tests will be repeated. The test will be performed with the pulse sensors installed on the stage but provisions are made to remove the pulse sensor, if necessary, to facilitate adjustment.</p> <p>At the conclusion of the Fire &amp; No-Fire Tests, an EBW Pulse Sensor Functional Test will be performed.</p> <p>PHASE - III</p> <p style="text-align: right;"><u>MFSC REQUIREMENTS</u> N/A</p>		
1. DATE	2. REASON	3. COMMENTS/REMARKS
4. CONTRACTOR APPROVAL	5. ORGANIZATION	6. DATE
<i>Test Brown</i>	CCSD	<i>10/10/73</i>
7. NASA/MSFC APPROVAL	8. ORGANIZATION	9. DATE
<i>W. J. O'Clair</i>	LV-GDC-24	<i>3/4/73</i>

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
S-1B STAGE EBW PULSE SENSOR CHECKOUT PROCEDURE		V-21582
		207 & Subs
HB-1/VAB		N/A
<p>SIB Stage Power Off for Fire &amp; No-Fire Test</p> <p>SIB OAT Power Off for Fire &amp; No Fire Test</p> <p>SIB Stage Power On for Functional Test</p> <p>SIB OAT Power On for Functional Test</p>		
<p>40M02852-EBW Pulse Sensor Assembly</p> <p>40M02332-Cal &amp; Op Procedures for EBW Monitor System Test Set</p> <p>40M01865 - EBW Monitor System AES</p> <p>40M01915 - EBW Monitor System Assy.</p> <p>40M03113 - EBW Pulse Sensor AES</p>		
16. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER V-21583	
Simulated Lightning Test - S-IB-12 Stage	3. EFFECTIVITY S-IB-12	
4. TEST SUMMARY		
To demonstrate adequate lightning protection design for the launch vehicle/Apollo-Soyuz hardware.		
5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION		
THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
This test will measure open circuit and common mode voltages induced in critical circuits and magnetic field intensities in selected zones of the S-IB-12 stage. These voltages and intensities will be generated by applying a controlled simulated lightning strike to the aft end of S-IB-12 stage. Resulting data will be analyzed to determine lightning protection adequacy.		
The S-IB-12 stage will be configured and equipped for this test as specified by the MSFC S-IB-12 Lightning Test Plan.		
MSFC Requirements None		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
<i>[Signature]</i>	CCSD	8-15-74
10. NASA/KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
<i>[Signature]</i> R. P. CLAY	LV-GDC-24	8/15/74

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
11. TEST TITLE	2. KSC TEST NUMBER	
Simulated Lightning Test - S-IB-12 Stage	V-21583	
13. LOCATION LC-39	14. COMPUTER PROC. IDENTIFICATION	3. EFFECTIVITY
VAB Transfer Aisle	None	S-IB-12
15. SUPPORT REQUIREMENTS		16. EST. TEST TIME
KSC Safety Fire Support Medical Support		2 days
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
KMI 1710 IB/SF KSC Safety Program K-V-053 Ground Safety Plan		
18. ITEM CONTINUATION		

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
TERMINAL COUNTDOWN SEQUENCER BENCH TEST		V-21584	
3. TEST OBJECTIVES		4. EFFECTIVITY	
TO VERIFY THAT THE TCS AND/OR TCS POWER SUPPLY ARE FUNCTIONALLY OPERABLE AND ABLE TO PERFORM THEIR RESPECTIVE FUNCTIONS PRIOR TO INSTALLATION IN THE SYSTEM.		AS 209 & SUBS	
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION			
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
The TCS and/or TCS Power Supply will be configured on the test bench with fused interrupt boxes and appropriate jumpers.			
Switching capability will be provided to simulate various input commands and voltage levels. TCS outputs will be recorded and evaluated to confirm proper counting sequences.			
The TCS Power Supply voltage outputs will be verified and the voltage monitor circuits checked for proper upper and lower tolerance limits.			
TEST REQUIREMENTS: MSFC: N/A			
6. DEV. DATE		REASON	
7. CONTRACTOR APPROVAL <i>H. M. Kimbrell</i>		Contractor Approval	
8. ORGANIZATION H. M. Kimbrell/W. O. Brown		9. DATE 8-28-74	
10. KSC APPROVAL <i>R. P. Clay</i>		11. ORGANIZATION LV-GDC-24	
		12. APPROVAL DATE 8/28/74	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
TERMINAL COUNTDOWN SEQUENCER BENCH TEST		V-21584	
3. LOCATION		4. COMPUTER PROC. IDENTIFICATION	
Elec. Lab - VAB		N/A	
5. SUPPORT REQUIREMENTS		6. EST. TEST TIME	
NONE		8 Hours	
7. OTHER APPLICABLE REFERENCE DOCUMENTATION			
NONE			
8. ITEM CONTINUATION			

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APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET (CONTINUATION SHEET)		PAGE <u>3</u> OF <u>4</u>
1. TEST TITLE		2. KSC TEST NUMBER
FLIGHT CONTROL COMPUTER SUBSYSTEM TEST		V-23029
		3. EFFECTIVITY
		AS-507 & SUBS
ITEM CONTINUATION		
(CONTINUED) BLOCK 5		
EQUIPMENT STATUS:		
A. THE FOLLOWING TEST EQUIPMENT WILL BE USED:		
1. INTERRUPT BOX-8 PIN-P/N JB2P0193 OR EQUIVALENT.		
2. INTERRUPT BOX-23 PIN-P/N JB2P0217 OR EQUIVALENT.		
3. INTERRUPT BOX-30 PIN-P/N JB2P0231 OR EQUIVALENT.		
4. INTERRUPT BOX-61 PIN-P/N JB2P0229 OR EQUIVALENT.		
5. INTERRUPT BOX-55 PIN-P/N JB2P0228 OR EQUIVALENT.		
6. DIGITAL VOLTMETER, HP3440, OR EQUIVALENT.		
7. SIMPSON 260.		
B. THE FOLLOWING PROCEDURES/TEST MUST BE COMPLETED PRIOR TO PERFORMING THIS TASKS: NONE		
CONFIGURATION: FLIGHT CONTROL COMPUTER AND LVDC/LVDA INSTALLED IN LAUNCH VEHICLE.		

APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET (CONTINUATION SHEET)		PAGE <u>4</u> OF <u>4</u>		
1. TEST TITLE		2. KSC TEST NUMBER		
FLIGHT CONTROL COMPUTER SUBSYSTEM TEST		V-23029		
		3. EFFECTIVITY		
		AS-507 & SUBS		
ITEM CONTINUATION				
REV	DATE	REASON	CONTR APPVL	KSC APPVL
A	05-27-68	CHANGE EFFECTIVITY	S/D.A. CREMINS	S/G.W. ELY
B	06-28-68	CHANGE EFFECTIVITY	S/D.A. CREMINS	S/G.W. ELY
C	06-26-68	UPDATE MSFC REQUIREMENTS, MODIFY BLOCK 5	S/D.A. CREMINS	S/G.W. ELY
D	10-30-68	UPDATE TO REFLECT ADDITIONAL TESTING	S/J.C. BOSTICK	S/G.W. ELY
E	03-07-69	REVISE EFFECTIVITY, DELETE 507 & SUBS	S/J.C. BOSTICK	S/G.W. ELY
F	03-07-69	REVISE EFFECTIVITY AND BLOCK 5	S/J.C. BOSTICK	S/G.W. ELY
G	05-29-69	REVISE MSFC REQUIREMENTS	S/G.L. WEAKLEY	S/G.W. ELY
H	05-29-69	REVISE MSFC REQUIREMENTS	S/G.L. WEAKLEY	S/G.W. ELY
I	01-09-70	REVISE MSFC REQUIREMENTS	S/D.A. CREMINS	S/G.W. ELY
J	01-05-71	REVISE MSFC REQUIREMENTS	<i>D.A. Cremin</i> 1-11-71	<i>K.W. Ely</i> 1-11-71
K	10-7-71	V-27192 CANCELLED, REMOVE REFERENCE TO THIS PROCEDURE	<i>ORL</i> <i>AKH</i> 10/10/71	<i>W.M.</i> <i>K.W. Ely</i> 10/18/71



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE CONTROL/EDS RATE GYRO AND CONTROL SIGNAL PROCESSOR SUBSYSTEM TEST (CTC4)		2. KSC TEST NUMBER V-23030	
		3. EFFECTIVITY 512 & SUBS 206 & SUBS	
4. TEST OBJECTIVES			
<p>A. TO EVALUATE THE OPERATION OF THE CONTROL/EDS RATE GYRO AND CONTROL SIGNAL PROCESSOR AS SUBSYSTEM IN THE LAUNCH VEHICLE ENVIRONMENT.</p> <p>B. TO FUNCTIONALLY VERIFY THE OPERATION OF THE CONTROL/EDS RATE GYRO AND CONTROL SIGNAL PROCESSOR.</p>			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION			
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
DESCRIPTION:			
<p>A. THE EXCESSIVE RATE SWITCH LEVELS ARE ASCERTAINED.</p> <p>B. THE COMPARATOR SET LEVELS ARE ASCERTAINED.</p> <p>C. A TIMED RAMP INPUT WILL BE APPLIED AND A DELTA RATE OUTPUT WILL BE EVALUATED.</p> <p>D. THIS TEST WILL BE PERFORMED AUTOMATICALLY.</p>			
EQUIPMENT STATUS:			
<p>A. THE FOLLOWING TEST EQUIPMENT WILL BE USED: N/A</p> <p>B. THE FOLLOWING PROCEDURES/TEST MUST BE COMPLETED PRIOR TO PERFORMING THIS TASK:</p> <ol style="list-style-type: none"> <li>V-23153 - CONTROL/EDS RATE GYRO RAMP GENERATOR CALIBRATION</li> <li>V-23155 - CONTROL/EDS RATE GYRO AND CONTROL SIGNAL PROCESSOR POLARITY TEST</li> </ol>			
CONFIGURATION: A. FLIGHT CONTROL SUBSYSTEM INSTALLED IN LAUNCH VEHICLE.			
PREREQ: III		TEST REQUIREMENTS SEE BLOCK 18	
1	8/27/74	REVISED MSFC REQUIREMENTS	C. R. Rainey <sup>1/1/75</sup> A. W. Ely <sup>1/1/75</sup>
2	4/26/72	EFFECTIVITY CHANGE; REVISE MSFC REQ'TS	A. L. T. <sup>4/1/72</sup> H. G. Ely <sup>4/1/72</sup>
3	1/1/71	REVISE BLOCKS 5, 14, 16	S/D. CREMINS S/G. ELY
4	1/1/71	UPDATE MSFC REQUIREMENTS	S/G. WEAKLEY S/G. ELY
5	1/1/71	REVISE MSFC REQUIREMENTS	S/G. WEAKLEY S/G. ELY
6	1/1/71	REVISE MSFC REQUIREMENTS	S/J. BOSTICK S/G. ELY
7	1/1/71	UPDATE TO REFLECT LATEST TEST CONFIGURATION	S/J. BOSTICK S/G. ELY
8	1/1/71	ADD MSFC DOCUMENT NUMBER	S/D. CREMINS S/G. ELY
9	1/1/71	MODIFY TITLE, BLK. 5; ADD MSFC REQ'TS (504)	S/D. CREMINS S/G. ELY
10. REV. DATE		REASON	
11. CONTRACTOR APPROVAL		12. APPROVAL DATE	
S. D. CREMINS		2 JANUARY 1968	
13. NASA APPROVAL		14. APPROVAL DATE	
S. G. W. ELY		1/3/68	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE CONTROL/EDS RATE GYRO AND CONTROL SIGNAL PROCESSOR SUBSYSTEM TEST (CTC4)		2. KSC TEST NUMBER V-23030	
		3. EFFECTIVITY 512 & SUBS 206 & SUBS	
13. LOCATION LC-39	14. COMPUTER PROC. IDENTIFICATION CTC4 - EDS/CRG TEST	15. EST. TEST TIME 4 MEN - 1.0 HOURS	
16. SUPPORT REQUIREMENTS			
INTERSTAGE: IU GROUND AND STAGE POWER SIVB STAGE POWER			
OFF-COMPLEX: N/A			
ON-COMPLEX: FACILITY COMMUNICATIONS (OIS)			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
NONE			
18. ITEM CONTINUATION (CONTINUED FROM BLOCK 5)			
TEST REQUIREMENTS			
MSFC: 7921601		TM-011-001-2H	
0.3.1.2.1.2.1		B.7.0.1	
0.3.1.2.1.2.1.1			
0.3.1.2.1.2.1.2			
0.3.1.2.1.2.1.3			
0.3.1.2.1.2.1.4			
0.3.1.2.1.2.1.5			
0.3.1.2.1.3.1			
0.3.1.2.1.4.1			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE CONTROL/EDS RATE GYRO AND CONTROL SIGNAL PROCESSOR POLARITY TEST		2. KSC TEST NUMBER V-23155	
3. EFFECTIVITY 512 & SUBS 206 & SUBS			
4. TEST OBJECTIVES TO VERIFY THAT THE CONTROL/EDS RATE GYRO/CONTROL SIGNAL PROCESSOR INPUT/OUTPUT POLARITIES ARE COMPATIBLE WITH THE VEHICLE FLIGHT CONTROL SYSTEMS POLARITY. (THIS TEST IS TO BE PERFORMED WITHIN THE SAME SHIFT, OR CONSECUTIVE SHIFTS, AND IMMEDIATELY PRIOR TO FLIGHT CONTROL SYSTEMS GAIN TEST CTC1/CTB1)			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. DESCRIPTION: A. THE CONTROL/EDS RATE GYRO UNIT WILL BE PHYSICALLY ROTATED ABOUT ITS THREE (3) MAJOR AXES TO COORDINATE AND DOCUMENT INPUT/OUTPUT RELATIONSHIPS. B. VERIFICATION OF POLARITY IS DEPENDENT UPON SATISFACTORY POLARITY COORDINATION BETWEEN THIS TEST AND THE PHI DOT (Ø) MEASUREMENTS, THE VALVE CURRENT (I <sub>v</sub> ) MEASUREMENTS, AND THE HYDRAULIC ACTUATOR POSITION MEASUREMENTS OF THE SIC/SIB A <sub>1</sub> PORTION OF THE SYSTEMS GAIN TEST (CTC1/CTB1). EQUIPMENT STATUS: A. THE FOLLOWING TEST EQUIPMENT WILL BE USED: N/A B. THE FOLLOWING PROCEDURES/TEST MUST BE COMPLETED PRIOR TO PERFORMING THIS TASK: CONTROL/EDS RATE GYRO AND CSP POWER VERIFICATION RAMP GENERATOR AND MEASURING CALIBRATION, V-23153. CONFIGURATION: FLIGHT CONTROL SUBSYSTEM INSTALLED IN LAUNCH VEHICLE. PHASE: III TEST REQUIREMENTS MSFC: 7921601 0.3.1.2.1.5.1 0.3.1.2.0.3.1 MSFC: TM-011-001-2H B.1.1.1.1.2			
F	5/27/74	REVISED MSFC REQUIREMENTS	C. R. Ramsey
E	4/26/72	CHANGE EFFECTIVITY, REVISE BLOCKS 4, 5	The. Hinton 8/1/72
D	10/15/73	UPDATE MSFC REQUIREMENTS	S/D. CREMINS
C	2/7/74	DELETE POWER VERIFICATION CHECK CHG. EFF.	S/J. BOSTIC
B	11/14/78	CHANGE TITLE & EFFECTIVITY	S/J. BOSTICK
A	10/23/78	UPDATE TO REFLECT EQUIPMENT STATUS	S/J. BOSTICK
6. REV. DATE		REASON	Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL S/ D. A. CREMINS		8. ORGANIZATION IBM - 918	9. DATE JANUARY 2, 1968
10. NASA KSC APPROVAL S/ G. W. ELY		11. ORGANIZATION LV-GDC-33	12. APPROVAL DATE JANUARY 3, 1968

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE CONTROL/EDS RATE GYRO AND CONTROL SIGNAL PROCESSOR POLARITY TEST		2. KSC TEST NUMBER V-23155	
3. EFFECTIVITY 512 & SUBS 206 & SUBS			
13. LOCATION LC-39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 4 MEN - 4 HOURS	
16. SUPPORT REQUIREMENTS INTERSTAGE: IU GROUND AND STAGE POWER IU MECHANICAL IU ELECTRICAL SIVB STAGE POWER OFF-COMPLEX: N/A ON-COMPLEX: QUALITY ASSURANCE FACILITY COMMUNICATIONS (OIS)			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION NONE			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
CONTROL/EDS RATE GYRO WHEEL SPEED TEST	V-23197	
	3. EFFECTIVITY 512 & SUBS 206 & SUBS	
4. TEST OBJECTIVES		
TO EVALUATE GYRO WHEEL BEARING CONDITION BY THE MEASUREMENT OF WHEEL ACCELERATION PARAMETERS.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION		
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
DESCRIPTION:		
A BREAKOUT BOX WILL BE CONNECTED TO CSP TEST PLUG J7 IN THE IU. ALL OTHER CSP & CRG CABLES WILL BE VERIFIED TO BE IN FLIGHT CONFIGURATION. AN OSCILLOSCOPE (BATTERY POWERED) WILL BE PREPARED FOR USE.		
THE CONTROL/EDS RATE GYROS AND CONTROL SIGNAL PROCESSOR WILL BE ENERGIZED AND WARMED UP FOR AT LEAST 15 MINUTES PRIOR TO BEGINNING THE WHEEL SPEED RUN-UP AND RUN-DOWN TESTING.		
TESTING WILL BE ACCOMPLISHED BY MONITORING EACH GYRO WHEEL SPEED SENSOR INDIVIDUALLY AT THE J7 BREAKOUT BOX UTILIZING THE PORTABLE OSCILLOSCOPE. THE CRG SUBSYSTEM WILL BE ENERGIZED FOR EACH GYRO AND THE TIME REQUIRED TO REACH SYNCHRONOUS SPEED WILL BE MEASURED AND RECORDED. THE CRG SUBSYSTEM WILL BE DE-ENERGIZED FOR EACH GYRO AND THE TIME INTERVAL BETWEEN A TWO CYCLE DISPLAY AND A ONE CYCLE DISPLAY (COAST TIME BETWEEN 100 RPS AND 50 RPS) WILL BE RECORDED.		
EQUIPMENT STATUS:		
A. THE FOLLOWING TEST EQUIPMENT WILL BE USED:		
1. INTERRUPT BOX-39 PIN-P/N FC6004 OR EQUIVALENT.		
2. OSCILLOSCOPE, BATTERY POWERED, TEKTRONIX MODEL 422 OR EQUIVALENT.		
3. STOP WATCH WITH 0.2 SECOND GRADUATION.		
B. THE FOLLOWING PROCEDURES/TEST MUST BE COMPLETED PRIOR TO PERFORMING THIS TASK: N/A		
PHASE: VA	TEST REQUIREMENTS S-IB	TEST REQUIREMENTS S-V
	MSFC: 7921601	MSFC: 7916404
	0.3.1.2.1.1.1	0.3.1.2.1.1.1
	0.3.1.2.1.1.2	0.3.1.2.1.1.2
(CONTINUED IN BLOCK 18)		
A	4/26/72	EFF. CHANGE, REVISE BLOCK 5 MSFC REQ'MTS
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
S/ G. L. WEAKLEY	IBM - 918	6/23/69
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
S/ C. A. WHITESIDE	LV-GDC-33	6/23/69

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
CONTROL/EDS RATE GYRO WHEEL SPEED TEST	V-23197	
	3. EFFECTIVITY 512 & SUBS 206 & SUBS	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME
LCC/IU/LC-39	N/A	5 MIN - 1.5 HOURS
16. SUPPORT REQUIREMENTS		
INTERSTAGE: IU GROUND AND STAGE POWER		
OFF-COMPLEX: N/A		
ON-COMPLEX: QUALITY ASSURANCE FACILITY COMMUNICATIONS (OIS) IU ELECTRICAL DDAS		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
NONE		
18. ITEM CONTINUATION		
(CONTINUED FROM BLOCK 5)		
CONFIGURATION: A. CONTROL/EDS RATE GYROS AND CONTROL SIGNAL PROCESSOR INSTALLED IN LAUNCH VEHICLE.		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE ST-124M STABILIZED PLATFORM DRIFT TEST		2. KSC TEST NUMBER V-23198	
		3. EFFECTIVITY AS REQUIRED	
<p>TO OBTAIN GYRO AND ACCELEROMETER PERFORMANCE INFORMATION IN THE HIGH WAY PRIOR TO ROLL OUT.</p>			
<p>THE TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>MONITOR THE OUTPUTS OF THE THREE ACCELEROMETERS, WITH THE PLATFORM +Z PIVOT UP; THE STABILIZED PLATFORM ALIGNMENT TURNED OFF, MEASURE THE DISPLACEMENT OF THE STABILIZED PLATFORM FOR A FIXED PERIOD OF TIME. MOVE THE INERTIAL GIMBAL TO A 45° ANGLE IN PITCH. MONITOR THE OUTPUTS OF THE THREE ACCELEROMETERS. MOVE THE INERTIAL GIMBAL TO +X PIVOT UP THEN 45° IN YAW. MONITOR THE OUTPUTS OF THE THREE ACCELEROMETERS. TURN STABILIZED PLATFORM ALIGNMENT OFF AND MEASURE DRIFT OF THE THREE GYROS. MOVE THE INERTIAL GIMBAL BACK TO THE +X PIVOT UP POSITION. MONITOR THE OUTPUT OF THE THREE ACCELEROMETERS. TURN ALIGNMENT OFF AND MEASURE DRIFT OF THE THREE GYROS.</p> <p>THE ACCELEROMETER DATA OBTAINED IS DRIFT, SCALE FACTOR, AND Y TO X AND Z TO X ORTHOGONALITY AND ACCELEROMETER SIDE BALANCE.</p> <p>CONFIGURATION: ST-124M FUNCTIONAL TEST COMPLETED. OPTICAL ACCESS TO THE PLATFORM PRISMS IS REQUIRED FOR THIS TEST.</p> <p>REASON: N/A</p> <p style="text-align: center;"><u>TEST REQUIREMENTS</u></p> <p>MSFC: 7921601 0.3.1.1.2.1.1</p>			
5	5/7/69	REVISE TEST AND SUPPORT REQUIREMENTS	
6	5/7/69	REVISE BLOCK 15	
7	DATE	REASON	Contractor Approval
8	7/31/69	ORGANIZATION IEM - M66	9. DATE 7/31/69
10	7/31/69	ORGANIZATION LV-60X-11	12. APPROVAL DATE 7/31/69

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE ST-124M STABILIZED PLATFORM DRIFT TEST		2. KSC TEST NUMBER V-23198	
		3. EFFECTIVITY AS REQUIRED	
13. LOCATION VAB	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 8 HOURS 8 MEN	
16. SUPPORT REQUIREMENTS			
RD: 40092			
INTERSTAGE:		S-IVB STAGE POWER IU POWER	
OFF-COMPLEX:		N/A	
ON-COMPLEX:		GROUND POWER TIMING FLIGHT COMPUTER SYSTEM DDAS RCA 110A COMPUTERS	
		GSE MEASURING LCC MEASURING HP GAS OIS Q.A.	
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
NONE			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
ST-124M GYRO DRIFT TEST		V-23220	
4. TEST OBJECTIVES		3. EFFECTIVITY	
TO MEASURE GYRO DRIFTS		AS REQUIRED	
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION			
(REPLACES IV-23180)			
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
WITH STABILIZED PLATFORM ALIGNMENT TURNED OFF, DISPLACEMENT OF PLATFORM AXIS FROM AN INITIAL SPACE FIXED REFERENCE POSITION FOR A CERTAIN TIME PERIOD IS MEASURED.			
LABORATORY FUNCTIONAL TEST COMPLETE.			
CONFIGURATION: N/A			
TEST REQUIREMENTS			
MSFC: 7921601		MSFC: 7916404	
0.3.1.1.2.2 THRU		0.3.1.1.2.2 THRU	
0.3.1.1.2.2.3		0.3.1.1.2.2.3	
6. REV.	DATE	REASON	Contractor Approval
A	12-3-73	REVISE BLOCKS 5 AND 16	
7. CONTRACTOR APPROVAL		8. ORGANIZATION	9. DATE
<i>D. T. Buchanan</i>		IBM - 960	3/11/71
10. NASA KSC APPROVAL		11. ORGANIZATION	12. APPROVAL DATE
<i>W. J. Smith</i>		41-600-11	3/11/71

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
ST-124M GYRO DRIFT TEST		V-23220	
13. LOCATION		3. EFFECTIVITY	
LAB/VAB/1M6	14. COMPUTER PROC. IDENTIFICATION	AS REQUIRED	
	N/A	15. EST. TEST TIME	
16. SUPPOBT REQUIREMENTS		3 MEN -- 8 HR. EACH	
INTERSTAGE: NONE			
OFF-COMPLEX: NONE			
ON-COMPLEX: NONE			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
NONE			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE ST-124M PRISM ALIGNMENT TEST		2. KSC TEST NUMBER V-23221
		3. EFFECTIVITY AS REQUIRED
4. TEST OBJECTIVES TO VERIFY PRISM ALIGNMENT		
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION <p>THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. (REPLACES IV-23186)</p> <p>DETERMINE THE INERTIAL PRISM'S ORIENTATION WITH RESPECT TO THE Y ACCELEROMETER MEASURING AXIS WITH MANUAL THEODOLITES.</p> <p>ACCELEROMETER CALIBRATION PROCEDURE COMPLETED.</p> <p>CONFIGURATION: EQUIPMENT MUST BE IN LABORATORY IN TEST STAND.</p>		
<p>TEST REQUIREMENTS</p> <p>MSFC: 7921601 0.3.1.1.2.2. THRU 0.3.1.1.2.2.3</p>		
<p>6. REV. DATE 5/7/74 REVISION 1</p> <p>7. NASA APPROVAL <i>[Signature]</i></p> <p>8. ORGANIZATION IBM - 960</p> <p>9. DATE 3/11/71</p> <p>10. APPROVAL DATE 3/12/71</p>		

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE ST-124M PRISM ALIGNMENT TEST		2. KSC TEST NUMBER V-23221
		3. EFFECTIVITY AS REQUIRED
13. LOCATION LAB/VAB/1M6		14. COMPUTER PROC. IDENTIFICATION N/A
15. SUPPORT REQUIREMENTS <p>INTERSTAGE: NONE</p> <p>OFF-COMPLEX: NONE</p> <p>ON-COMPLEX: Q.A.</p>		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION NONE		
18. ITEM CONTINUATION		

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER V-23222	
ST-124M ALIGNMENT SYSTEM PERFORMANCE TEST	3. EFFECTIVITY AS REQUIRED	
4. TEST OBJECTIVES TO VERIFY THE PERFORMANCE AND TO ASSURE COMPATIBILITY BETWEEN PLATFORM AND ALIGNMENT SYSTEM.		
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION (REPLACES IV-23187) THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. EACH GYRO IS TORQUED A NUMBER OF DEGREES AND THE TIME OF RECOVERY IS RECORDED. THE GAINS OF ALL LOOPS IN THE ALIGNMENT SYSTEM ARE ADJUSTED FOR STABILITY IN ALL MODES OF OPERATION. THE INERTIAL PLATFORM IS DRIVEN BY THE SIMULATOR TO AN ANGLE. THE ANGLE IS THEN VERIFIED BY OPTICAL MEASUREMENTS. CONFIGURATION: EQUIPMENT MUST BE IN A LABORATORY IN TEST STAND		
PHASE: <u>IA, IB, &amp; II</u>		TEST REQUIREMENTS MSFC: 7921601 0.3.1.1.2.1 0.3.1.1.2.1.1 0.3.1.1.2.2 THRU 0.3.1.1.2.2.3
A 5/7/74 REVISE TEST AND SUPPORT REQUIREMENTS		
6. REVISION DATE	REASON	Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL <i>E. J. Buchanan</i>	8. ORGANIZATION IBM - 960	9. DATE 3/11/71
10. NASA APPROVAL <i>[Signature]</i>	11. ORGANIZATION LV-601-12	12. APPROVAL DATE 3/12/71

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER V-23222	
ST-124M ALIGNMENT SYSTEM PERFORMANCE TEST	3. EFFECTIVITY AS REQUIRED	
13. LOCATION LAB/VAB/1M6	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 4 MEN -- 6 HR. EACH
16. SUPPORT REQUIREMENTS  INTERSTAGE: NONE OFF-COMPLEX: NONE ON-COMPLEX: Q.A.		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION NONE		
18. ITEM CONTINUATION		

KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE ST-124/V/32:1 RESOLVER TEST (STANDBY)		2. KSC TEST NUMBER V-23223	
		3. EFFECTIVITY AS REQUIRED	
4. TEST OBJECTIVES TO VERIFY 32:1 RESOLVER OUTPUTS; SCALE FACTORS AND NULLS.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION (REPLACES IV-23175) THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. SIMULATE VEHICLE MOVEMENT WITH THE TEST STAND AND RECORD GIMBAL ANGLE READOUTS. CONFIGURATION: N/A  TEST REQUIREMENTS MSFC: 7921601 0.3.1.1.2.2.3  PAGE 1A, 1B, & 11			
A 5/7/74 REVISE TEST AND SUPPORT REQUIREMENTS			
6. CONTRACTOR APPROVAL <i>[Signature]</i>		7. REASON Contractor Approval	
8. ORGANIZATION IBM - 960		9. DATE 4/30/71	
10. NASA/KSC APPROVAL <i>[Signature]</i>		11. ORGANIZATION IV-SFC-1	
		12. APPROVAL DATE 5/4/71	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE ST-124/V/32:1 RESOLVER TEST (STANDBY)		2. KSC TEST NUMBER V-23223	
		3. EFFECTIVITY AS REQUIRED	
13. LOCATION LAB-VAB-1M6	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 4 MEN - 4.0 HOURS	
16. SUPPORT REQUIREMENTS INTERSTAGE: NONE OFF-COMPLEX: NONE ON-COMPLEX: Q.A.			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION NONE			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>															
1. TEST TITLE  ST-124M STABILIZED PLATFORM SYSTEM PRELIMINARY OPERATIONS FOR LABORATORY TESTING (STANDBY)		2. KSC TEST NUMBER V-23224 3. EFFECTIVITY AS REQUIRED															
4. TEST OBJECTIVES  TO PERFORM RECEIVING INSPECTION AND TO PREPARE THE SYSTEM FOR ELECTRICAL TESTING.																	
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION (REPLACES IV-23176)  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  UNPACK EQUIPMENT AND PERFORM EXTERNAL AND INTERNAL INSPECTIONS. INSTALL IN TEST STAND. CONNECT PNEUMATIC LINE TO PLATFORM AND ADJUST PRESSURE TO MEET PLATFORM REQUIREMENTS. CONNECT THE TEST CONSOLE CABLES AND INTERCONNECTING SYSTEM CABLES. PERFORM COOLANT SYSTEM CONTAMINATION CHECKS AND PREPARE FOR OPERATIONS.  UNDER NORMAL CONDITIONS, THE COVER WILL NOT BE REMOVED.  GN2 SUPPLY TO PLATFORM WITHIN PROPER PURITY SPECIFICATIONS. LABORATORY AREA CLEANED AND PREPARED FOR RECEIVING THE ST-124M STABILIZED PLATFORM SYSTEM.  CONFIGURATION: N/A  <div style="text-align: center;"><u>TEST REQUIREMENTS</u> MSFC: N/A</div>																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">6. REV.</td> <td style="width: 10%;">DATE</td> <td style="width: 40%;">REASON</td> <td style="width: 20%;">Contractor Approval</td> <td style="width: 20%;">KSC Approval</td> </tr> <tr> <td colspan="2">7. CONTRACTOR APPROVAL <i>D. T. Buchanan</i></td> <td>8. ORGANIZATION IBM - 960</td> <td colspan="2">9. DATE 4/30/71</td> </tr> <tr> <td colspan="2">10. NASA-KSC APPROVAL <i>C. M. L. P. S.</i></td> <td>11. ORGANIZATION LV-600-11</td> <td colspan="2">12. APPROVAL DATE 5/4/71</td> </tr> </table>			6. REV.	DATE	REASON	Contractor Approval	KSC Approval	7. CONTRACTOR APPROVAL <i>D. T. Buchanan</i>		8. ORGANIZATION IBM - 960	9. DATE 4/30/71		10. NASA-KSC APPROVAL <i>C. M. L. P. S.</i>		11. ORGANIZATION LV-600-11	12. APPROVAL DATE 5/4/71	
6. REV.	DATE	REASON	Contractor Approval	KSC Approval													
7. CONTRACTOR APPROVAL <i>D. T. Buchanan</i>		8. ORGANIZATION IBM - 960	9. DATE 4/30/71														
10. NASA-KSC APPROVAL <i>C. M. L. P. S.</i>		11. ORGANIZATION LV-600-11	12. APPROVAL DATE 5/4/71														

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE  ST-124M STABILIZED PLATFORM SYSTEM PRELIMINARY OPERATIONS FOR LABORATORY TESTING (STANDBY)		2. KSC TEST NUMBER V-23224 3. EFFECTIVITY AS REQUIRED
13. LOCATION LAB-VAB-1M6	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 4 MEN - 4.0 HOURS
16. SUPPORT REQUIREMENTS  INTERSTAGE: NONE  OFF COMPLEX: NONE  ON COMPLEX: Q.I.		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  NONE		

KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE LABORATORY PNEUMATIC TEST OF THE ST-124M STABILIZED PLATFORM SYSTEM (STANDBY)		2. KSC TEST NUMBER V-23225	
		3. EFFECTIVITY AS REQUIRED	
4. TEST OBJECTIVES			
<p>A. TO VERIFY THAT THE STABILIZED PLATFORM PNEUMATIC PERFORMANCE IS WITHIN SPECIFIED FLOW AND PRESSURE TOLERANCES DURING SIMULATED FLIGHT CONDITIONS.</p> <p>B. TO CALIBRATE THE INTERNAL AMBIENT PRESSURE TRANSDUCER.</p> <p>C. TO DETERMINE PLATFORM, PEA, ASC, AND AC POWER SUPPLY LEAK RATE.</p> <p>D. TO VERIFY THAT THE PLATFORM PURGE SYSTEM PERFORMANCE IS WITHIN SPECIFIED FLOW AND PRESSURE TOLERANCES.</p>			
5. DESCRIPTION OF EQUIPMENT STATUS/CONFIGURATION (REPLACES IV-23177)			
THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
<p>A. ENERGIZE ELECTRICAL, PNEUMATIC, AND COOLING GSE AND ALLOW PLATFORM TO REACH OPERATING TEMPERATURE. REGULATE INLET GAS SUPPLY PRESSURE THROUGHOUT TEST TO MAINTAIN A PRESCRIBED DIFFERENTIAL PRESSURE WITH REFERENCE TO INTERNAL AMBIENT PRESSURE. APPLY A VACUUM AT THE ORIFICE TO SIMULATE EXTERNAL AMBIENT PRESSURE CONDITIONS AFTER LIFTOFF. RECORD INLET, INTERNAL AMBIENT, DIFFERENTIAL, AND EXTERNAL AMBIENT PRESSURE VALUES, AND FLOW IN S.L./MIN.</p> <p>B. ADJUST THE INTERNAL AMBIENT PRESSURE AND CHECK THE INTERNAL AMBIENT PRESSURE TRANSDUCER THROUGHOUT ITS OPERATING RANGE.</p> <p>C. PRESSURIZE PLATFORM AND ASSOCIATED EQUIPMENT, AND CHECK FOR LEAKS.</p> <p>D. ADJUST THE PURGE ORIFICE INLET PRESSURE WITHIN A SPECIFIED RANGE UNTIL THE INTERNAL AMBIENT PRESSURE AND PURGE ORIFICE FLOW RATE FALL WITHIN PRESCRIBED LIMITS. RECORD VALUES.</p> <p>ELECTRICAL, PNEUMATIC AND COOLING GSE CONNECTED. NO SUPPORT REQUIRED.</p> <p>CONFIGURATION: N/A</p>			
TEST REQUIREMENTS			
MSFC: 7921601			
0.3.1.1.2.2			
THRU			
0.3.1.1.2.2.3			
PHASE 1A, 1B & 11			
6. REVISIONS			
7. DATE	8. REASON	9. DATE	
5/7/74	REVISE TEST AND SUPPORT REQUIREMENTS	4/30/71	
10. CONTRACTOR APPROVAL		11. ORGANIZATION	
D. T. Buchanan		IBM - 960	
12. NASA/KSC APPROVAL		13. APPROVAL DATE	
C. P. P. P.		5/4/71	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE LABORATORY PNEUMATIC TESTS OF THE ST-124M STABILIZED PLATFORM SYSTEM (STANDBY)		2. KSC TEST NUMBER V-23225	
		3. EFFECTIVITY AS REQUIRED	
13. LOCATION LAV-VAB-IM6	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 4 MEN - 24.0 HOURS	
16. SUPPORT REQUIREMENTS			
INTERSTAGE: NONE			
OFF-COMPLEX: NONE			
ON-COMPLEX: Q.A.			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
ST-124M STABILIZED PLATFORM SYSTEM PRELIMINARY OPERATIONS FOR LAB TESTING.			
18. ITEM CONTINUATION			

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE FUNCTIONAL TEST OF THE ST-124M STABILIZED PLATFORM SYSTEM IN THE LABORATORY (STANDBY)		2. KSC TEST NUMBER V-23226
		3. EFFECTIVITY AS REQUIRED
4. TEST OBJECTIVES TO APPLY POWER TO THE STABILIZED PLATFORM SYSTEM AND VERIFY SATISFACTORY FUNCTIONAL PERFORMANCE.		
5. TEST DESCRIPTION, EQUIPMENT STATUS/CONFIGURATION (REPLACES IV-23179) THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  APPLY POWER TO THE TEST CONSOLE. APPLY POWER TO THE STABILIZED PLATFORM SYSTEM. OBSERVE ALL METERS AND RECORDERS FOR NORMAL INDICATIONS. VERIFY THAT EACH SWITCH OPERATION PERFORMS ITS FUNCTION SATISFACTORYLY.  PLATFORM SYSTEM PREPARATION FOR LABORATORY TEST COMPLETED.  CONFIGURATION: N/A  TEST REQUIREMENTS MSFC: 7921601 0.3.1.1.2.2 THRU 0.3.1.1.2.2.3  PHASES 1A, 1B AND 11		
A 5/7/74 REVISE TEST AND SUPPORT REQUIREMENTS		
6. REV. DATE		REASON
7. CONTRACTOR APPROVAL <i>[Signature]</i>		8. ORGANIZATION IBM - 960
9. DATE 4/30/71		10. CONTRACTOR APPROVAL <i>[Signature]</i>
11. ORGANIZATION LV-COC-11		12. APPROVAL DATE 5/4/71

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE FUNCTIONAL TEST THE ST-124M STABILIZED PLATFORM SYSTEM IN THE LABORATORY (STANDBY)		2. KSC TEST NUMBER V-23226
		3. EFFECTIVITY AS REQUIRED
13. LOCATION LAB-VAB-1M6	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 4 MEN - 5.0 HOURS
16. SUPPORT REQUIREMENTS  INTERSTAGE: NONE  OFF-COMPLEX: NONE  ON-COMPLEX: Q.A.		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  NONE		
18. ITEM CONTINUATION		





KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE READINESS CHECKS OF S-IB FLIGHT CONTROL TEST EQUIPMENT		2. KSC TEST NUMBER V-23259
		3. EFFECTIVITY 206 & Subs
4. TEST OBJECTIVES  TO VERIFY THAT THE S-IB FLIGHT CONTROL TEST EQUIPMENT IS READY TO SUPPORT LABORATORY AND/OR S-IB STAGE FLIGHT CONTROL SYSTEM CHECKOUT.		
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
1. Readiness checks will be performed on the following S-IB Flight Control Equipment: <ul style="list-style-type: none"> <li>a. S-IB Interrupt Boxes</li> <li>b. S-IB Actuator Calibration and Measuring Fixture</li> <li>c. S-IB Portable Substitute Computers</li> <li>d. S-IB Hydraulic Servicer</li> <li>e. S-IB Actuator Test Boxes</li> <li>f. S-IB Actuator Dummy Loads</li> </ul>		
2. Tests will be conducted per each vehicle in the Flight Control Laboratory prior to S-IB Flight Control System checkout.		
CONFIGURATION: LABORATORY TESTS.		
TEST REQUIREMENTS: MSFC - N/A		
6. DATE E 2-23-73	7. DESCRIPTION To delineate checkout of additional equip.	8. APPROVAL <i>[Signature]</i> 2-23-73
A 6-19-72	To comply with TI-2-17, Rev. F	<i>[Signature]</i> 6-19-72
9. DATE 10-11-71	10. ORGANIZATION CCSD	11. APPROVAL <i>[Signature]</i>
12. DATE 10/20/71	13. ORGANIZATION LV-GDC-33	14. APPROVAL <i>[Signature]</i>

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE READINESS CHECKS OF S-IB FLIGHT CONTROL TEST EQUIPMENT		2. KSC TEST NUMBER V-23259
		3. EFFECTIVITY 206 & Subs
13. LOCATION F. C. Lab VAB	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 8.0 Hours
16. SUPPORT REQUIREMENTS  NONE		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  NONE		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE VISUAL INSPECTION AND FUNCTIONAL TEST OF SPARE S-IB HYDRAULIC ACTUATORS IN LABORATORY		2. KSC TEST NUMBER V-23260
4. TEST OBJECTIVES TO VISUALLY INSPECT AND FUNCTIONALLY TEST THE SPARE S-IB HYDRAULIC ACTUATOR IN THE FLIGHT CONTROL LAB TO VERIFY THAT NO DAMAGE HAD OCCURRED DURING SHIPMENT.		3. EFFECTIVITY 206 & SUBS
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  The Actuator will be visually inspected for physical damage, serial numbers shall be recorded.  Resistance, electrical noise, and electro-mechanical alignment tests will be conducted utilizing the S-IB actuator test box assembly and the actuator cali- bration and measuring fixture.  <u>CONFIGURATION: LABORATORY TEST</u>		
TEST REQUIREMENTS: MSFC - N/A		
6. REV. DATE A 6/74 REVISE EFFECTIVITY		7. APPROVAL Contractor Approval <i>[Signature]</i> KSC Approval <i>[Signature]</i>
7. CONTRACT APPROVAL D. Oberlin/W.O. Brown		8. ORGANIZATION CCSD
9. DATE 10-V-71		10. NASA/KSC APPROVAL George W. Ely
11. ORGANIZATION LV-GDC-33		12. APPROVAL DATE 10/20/71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE VISUAL INSPECTION AND FUNCTIONAL TEST OF SPARE S-IB HYDRAULIC ACTUATORS IN LABORATORY		2. KSC TEST NUMBER V-23260
13. LOCATION F/C Lab - VAB		14. COMPUTER PROC. IDENTIFICATION N/A
15. SUPPORT REQUIREMENTS  NONE		16. EST. TEST TIME 3.0 Hours
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  NONE		
18. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1 TEST TITLE S-IB HYDRAULIC ACTUATOR POTENTIOMETER LAB INSPECTION AND CHECKOUT		2 KSC TEST NUMBER V-23261
		3 EFFECTIVITY 206 & SUBS
4 TEST OBJECTIVES  TO VISUALLY INSPECT AND FUNCTIONALLY TEST THE SPARE S-IB HYDRAULIC ACTUATOR POTENTIOMETER.		
5 TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  1. The potentiometer will be visually inspected for damage and serial numbers will be recorded.  2. Resistance, electro-mechanical alignment, and potentiometer electrical noise tests will be conducted.  3. The S-IB actuator test box and the actuator calibration and measuring fixture will be used in this test.  CONFIGURATION: LABORATORY TEST.		
TEST REQUIREMENTS: MSFC - LVTOM1-548-67-CCSD-147		
6 REVISION EFFECTIVITY 1 2-20-73 Potentiometer mating with extension shall deleted from this procedure.		7 APPROVAL Contractor Approval KSC Approval
8 ORGANIZATION W.O. Brown	9 DATE 10-4-71	
10 ORGANIZATION George W. Ely	11 DATE 10/20/71	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1 TEST TITLE S-IB HYDRAULIC ACTUATOR POTENTIOMETER LAB INSPECTION AND CHECKOUT		2 KSC TEST NUMBER V-23261
		3 EFFECTIVITY 206 & SUBS
13 LOCATION FC LAB, VAB	14 COMPUTER PROC. IDENTIFICATION N/A	15 EST TEST TIME 2 Hours
16 SUPPORT REQUIREMENTS  NONE		
17 OTHER APPLICABLE REFERENCE DOCUMENTATION  NONE		
18 ITEM CONTINUATION		

U.S. DEPT. OF JUSTICE 7/07

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1 TEST TITLE  S-1B FLIGHT CONTROL POST ERECTION OPERATIONS		2 SSC TEST NUMBER V-23262
3 LOCATION VAB - HB #1	4 COMPUTER PROC IDENTIFICATION N/A	5 EFFECTIVITY 2065 SUPS
6 SPECIAL REQUIREMENTS		7 EST TEST TIME 2.0 Hours
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17 OTHER APPLICABLE REFERENCE DOCUMENTATION  NONE		
18 ITEM CONTINUATION		
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APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1 TEST TITLE  INSTALLATION AND REMOVAL OF S-IB ACTUATOR HOLDING FIXTURES		2 -32 TEST NUMBER V-23263
13 LOCATION LC-39	14 COMPUTER PROC IDENTIFICATION N/A	3 EFFECTIVITY 206 R STS
16 SUPPORT REQUIREMENTS  S-IB Vehicle Mechanical		15 EST TEST TIME 2.0 Hours
17 OTHER APPLICABLE REFERENCE DOCUMENTATION  NONE		
18 ITEM CONTINUATION		

KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
S-IB HYDRAULIC ACTUATOR VISUAL INSPECTION AND ELECTRO-MECHANICAL STATIC TEST		2. SAC TEST NUMBER V-23264 3. EFFECTIVITY 206 & SUBS
TO PERFORM A VISUAL INSPECTION AND FUNCTIONAL TEST ON EACH OF THE EIGHT (8) HYDRAULIC ACTUATORS ON THE S-IB STAGE.		
TEST FILE REF ON EQUIPMENT STATUS CONFIGURATION THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
1. The actuators must be mechanically disconnected from the thrust frame for this test. 2. A complete visual inspection will be conducted on all eight (8) hydraulic actuator assemblies and all significant data (Ser. No., Cure Date, etc.) recorded. 3. An electro-mechanical alignment, a resistance test on both potentiometers and servo valve, and a potentiometer electrical noise test is then conducted utilizing the S-IB actuator test box.		
CONFIGURATION: Vehicle in vertical position.		
TEST REQUIREMENTS: MSFC - 3.1.2.1 3.1.2.3 3.1.2.5		
4. REV. DATE <u>1-4-71</u> REASON <u>MINOR EFFECTIVITY</u>		Contractor Approval <u>[Signature]</u> KSC Approval <u>[Signature]</u>
5. TEST FILE ADDRESS <u>1-1-71</u> 6. ORGANIZATION <u>CCSD</u>		9. DATE <u>10-4-71</u>
10. NASA-KSC APPROVAL <u>[Signature]</u> 11. ORGANIZATION <u>LV-GDC-53</u>		12. APPROVAL DATE <u>10/20/71</u>

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE S-IB HYDRAULIC ACTUATOR VISUAL INSPECTION AND ELECTRO-MECHANICAL STATIC TEST		2. SAC TEST NUMBER V-23264 3. EFFECTIVITY 206 & SUBS
13. LOCATION H.B. #1. VAB	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 8.0 Hours
16. SUPPORT REQUIREMENTS  VEHICLE MECHANICAL (AS REQUIRED)		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  NONE		
18. ITEM CONTINUATION		





KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
S-IB STAGE HYDRAULIC ACTUATOR SYSTEM FUNCTIONAL TEST		2 KSC TEST NUMBER V-23266 3 EFFECTIVITY 206 & SUBS
<p>1. To functionally test the complete S-IB hydraulic actuator system and its associated equipment.</p> <p>2. To test the S-IB flight control system in normal flight configuration.</p>		
<p>4 TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION</p> <p>THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>This test is conducted in two parts. Part I - Single System Operation Part II - All Systems - On Operation</p> <p>Part I - Single System Operation Each individual hydraulic system is activated, and visually inspected for leaks or erratic operation. The actuators are then cycled and nulled using the S-IB substitute computer.</p> <p>Part II - All Systems Operation All hydraulic systems are activated. The S-IB system nulls are read at ambient temp. and at approximately 150°F. The SIB actuators will be cycled at approximately 1000°F. Hydraulic systems are inspected for leaks and erratic operation.</p> <p>A visual inspection is performed before, during, and after each of the above tests.</p> <p>CONFIGURATION: Vehicle in vertical position after Power On.</p> <p>TEST REQUIREMENTS MSFC - 3.1.1.2.2. ] 3.1.2.4 3.1.2.7</p>		
5 TEST EFFECTIVITY		
A 7-11-73 To change Part II of Test Description		
6 REV. DATE	REASON	7 CONTRACTOR APPROVAL
8 ORGANIZATION	9. DATE	10. APPROVAL DATE
A. Petro W.O. Brown	CCSD	10 4.71
11. ORGANIZATION	12. APPROVAL DATE	
LV-GDC-37	10/20/71	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1 TEST TITLE S-IB STAGE HYDRAULIC ACTUATOR SYSTEM FUNCTIONAL TEST		2 KSC TEST NUMBER V-23266 3 EFFECTIVITY 206 & SUBS
4 LOCATION H.B. #1, VAB	14 COMPUTER PROC IDENTIFICATION OAHF	15 EST TEST TIME 4.0 Hours
16 SUPPORT REQUIREMENTS S-IB Vehicle Mechanical S-IB Blockhouse Measuring I. U. Flight Control D. D. A. S. Blockhouse		
17 OTHER APPLICABLE REFERENCE DOCUMENTATION NONE		
18 ITEM CONTINUATION		



KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
S-IB HYDRAULIC ACTUATOR POSITION MEASURING CALIBRATION		1. KSC TEST NUMBER V-23267 2. EFFECTIVITY 206 & SUBS
4. TEST PURPOSES To calibrate the S-IB engine deflection meters and the Flight Control Firing Room recorders. To verify actuator measuring potentiometer calibration curves. To obtain data point inputs for computer programs.		
5. EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. Move the S-IB Hydraulic Actuators to discrete positions and adjust the S-IB engine deflection meters and the Flight Control Firing Room recorders to indicate proper positions. Verify with measuring that the measuring voltage associated with a particular position falls within the tolerance range of the actuator calibration curves. The following procedures/tests must be completed prior to performing this task: 1. Functional Test and Calibration of S-IB Firing Room Flight Control Support Equipment. 2. S-IB Flight Control Pre-Operational and Securing Procedure. 3. S-IB Hydraulic Actuator Visual Inspection and Electro-Mechanical Static Test. CONFIGURATION: Vehicle Vertical and Mated TEST REQUIREMENTS: MSFC: N/A		
6. REVISION EFFECTIVITY 1. REV. DATE 2. D. Daddow/W.O. Brown 3. KSC APPROVAL DATE 10/20/71		7. REASON CCSD 8. ORGANIZATION LV-CDC-33 9. DATE 10/5/71 10. CONTRACTOR APPROVAL 11. KSC APPROVAL 12. APPROVAL DATE 10/20/71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE S-IB HYDRAULIC ACTUATOR POSITION MEASURING CALIBRATION		2. KSC TEST NUMBER V-23267 3. EFFECTIVITY 206 & SUBS 4. TEST DURATION 12 Hours
5. LOCATION FR-3, HB-1	6. COMPUTER PROC IDENTIFICATION QAAC	
7. SUPPORT REQUIREMENTS GROUND POWER SATURN GROUND COMPUTER COMPLEX IU MEASURING IU DDAS		
8. OTHER APPLICABLE REFERENCE DOCUMENTATION NONE		
9. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
S-IB STAGE ACTUATOR POSITION CALIBRATION DATA LOAD		2 KSC TEST NUMBER V-23268	3 EFFECTIVITY 206 & SUBS
PROVIDE S-IB STAGE ACTUATOR POSITION CALIBRATION DATA FOR PROGRAMS CTB1, CTB6, and CTB7.			
TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
1. Load the magnetic tape with data from 80 card column cards which has the actuator positional information. 2. Verify that the correct identification is on the effective tape. 3. Edit the calibration tape or "key in" corrected calibration data when processing data from a single actuator or when correcting otherwise invalid data. 4. This operation will be performed off line. CONFIGURATION: N/A			
TEST REQUIREMENTS: MSFC: N/A			
1. DATE <u>10/20/71</u> EFFECTIVITY		Contractor Approval <u>[Signature]</u> KSC Approval <u>[Signature]</u>	
2. DATE <u>10/20/71</u> REASON		9. DATE <u>10-2-71</u>	
3. ORGANIZATION <u>CCSD</u>		12. APPROVAL DATE	
4. DATE <u>10/20/71</u>		11. ORGANIZATION <u>LV-GDC-33</u>	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1 TEST TITLE S-IB STAGE ACTUATOR POSITION CALIBRATION DATA LOAD		2 KSC TEST NUMBER V-23268	
3 LOCATION FR#3 & HB-1		4 COMPUTER CHOC IDENTIFICATION CTB8	
5 SUPPORT REQUIREMENTS		6 EFFECTIVITY 206 & SUBS	
7 EST TEST TIME 4.0 Hours			
1. Saturn Ground Computer Complex			
17 OTHER APPLICABLE REFERENCE DOCUMENTATION			
NONE			
18 ITEM CONTINUATION			

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
S-IB ACTUATOR DIFFERENTIAL PRESSURE FEED-BACK AND ACTUATOR STICTION TEST		TEST NUMBER V-23269
		EFFECTIVITY 206 & SUBS
<p>TO CONFIRM THE PROPER FUNCTIONING OF THE SERVO VALVES ON THE S-IB ACTUATORS.</p>		
<p>THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p>		
<ol style="list-style-type: none"> <li>1. A step input equivalent to 1.5 degrees of actuator movement is applied to the actuator servo valves to verify proper operation of the differential pressure feedback (DPF) Loop.</li> <li>2. A Sinusoidal input of 0.1 Hz at <math>\pm 0.1^\circ</math> is applied to the actuator servo valves to verify proper operation of the servo valves and no contamination of the hydraulic fluid.</li> <li>3. The input signals are provided by the S-IB substitute computer.</li> <li>4. The actuator hydraulic system will provide power for actuator response.</li> <li>5. Actuator responses monitored on a portable recorder will be used for test evaluation.</li> </ol>		
<p>CONFIGURATION: The actuators are mechanically connected in flight configuration.</p>		
<p><b>TEST REQUIREMENTS:</b> MSFC - 3.1.2.2 3.1.2.6</p>		
EFFECTIVITY		Contractor Approval
DATE	REASON	KSC Approval
10-8-71	CCSD	10-8-71
10-20-71	LV-GDC-33	10/20/71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
S-IB ACTUATOR DIFFERENTIAL PRESSURE FEED-BACK AND ACTUATOR STICTION TEST		TEST NUMBER V-23269
		EFFECTIVITY 206 & SUBS
LOCATION LC-39	COMPUTER PROC IDENTIFICATION OAGS	TEST TIME 4.0 Hours
<p>SUPPORT REQUIREMENTS</p> <ol style="list-style-type: none"> <li>1. RCA-110A</li> <li>2. S-IB Power</li> <li>3. LCC Measuring (LVO)</li> <li>4. DDAS</li> <li>5. S-IB Vehicle Mechanical</li> </ol>		
<p>OTHER APPLICABLE REFERENCE DOCUMENTATION</p> <p>NONE</p>		
<p>ITEM CONTINUATION</p>		



## S-1B STAGE HYDRAULIC SYSTEM OPERATION

STANDBY

2 NSC TEST NUMBER  
V-23270

3. EFFECTIVITY  
As Required

PROVIDE HYDRAULIC SYSTEM OPERATION UTILIZING THE S-IB  
SUBSTITUTE COMPUTER IN SUPPORT OF OTHER TEST OPERATIONS  
REQUIRING HYDRAULICS.

TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION

THIS TEST ☒ DOES ☐ DOES NOT CONTAIN HAZARDOUS OPERATIONS.

1. Connect the S-IB Substitute Computer to an S-IB Hydraulic Actuator System.
2. Apply Hydraulic Pressure to the Actuator System.
3. Visually inspect the Hydraulic Actuator System for leaks or erratic operation.
4. Operate S-IB Hydraulic System as required.

CONFIGURATION: VEHICLE IN VERTICAL POSITION, POWER ON.

TEST REQUIREMENTS:

MSFC - 3.1.1.1.1 THROUGH 3.1.1.1.4  
3.1.2.7

C	3-28-73	Delete Item 5, Block 5, & change BH Meas. to LCC Meas.	10-4-71
B	3-28-73	Change to Hazardous Opns. under certain conditions	10-4-71
A	1/23/73	TO REFLECT COMPLETE MSFC TEST REQUIREMENT 31111 THROUGH 31114	10-4-71
EFF.	DATE	REASON	Contractor Approval NSC Approval
INSTRUCTOR APPROVAL D. Daddow, W. O. Brown		9. ORGANIZATION CCSD	9. DATE 10-4-71
10. NASA NSC APPROVAL DATE 10-20-71		11. ORGANIZATION LV-GDC-33	12. APPROVAL DATE 10-20-71

1. TEST TITLE

### S-IB STAGE HYDRAULIC SYSTEM OPERATION

V-23270

STANDBY

As Required

13 LOCATION

LCC 39

14 COMPUTER PROC. IDENTIFICATION

OAGS - General Support Program

13. EST. TEST TIME

1.0 Hour

16. SUPPORT REQUIREMENTS

S-IB Vehicle Mechanical

LCC                      Measuring

DDAS

RCA-110A Ground Computer System

### S-IB Ground Networks

17. OTHER APPLICABLE REFERENCE DOCUMENTATION:

1. S-IB Flight Control Pre-Operational & Securing Proc.
2. Actuator, Thrust Vector Control, Specification for 10M01033.

18 ITEM CONTINUATION



Y 22 P 2 63 218 9/67

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1 TEST TITLE MATING AND ALIGNMENT OF SIB STAGE TO LAUNCHER		2 SSC TEST NUMBER V-23275
13 LOCATION <u>Launcher</u> COMPUTER PROC. IDENTIFICATION Pod. - VAB N/A		3 EFFECTIVITY 206 & SUBS
16 SUPPORT REQUIREMENTS		19 EST TEST TIME 8.0 Hours
1. SIB vehicle mechanical personnel to open SIB adjust able inserts. 2. SIVB vehicle mechanical personnel to open SIVB adjust able inserts. (If SIVB and/or IU is stacked) 3. GSE mechanical personnel to adjust nose blocks. 4. IBM PERSONNEL TO OPERATE OPTICAL INSTRUMENTS.		
17 OTHER APPLICABLE REFERENCE DOCUMENTATION NONE		
18 ITEM CONTINUATION		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1 TEST TITLE  MEASURE SATURN IB STAGE ALIGNMENT		2 KSC TEST NUMBER V-23276 3 EFFECTIVITY 206 & SUBS	
4 TEST PURPOSES  VERIFY SIB STAGE ALIGNMENT WITH RESPECT TO LOCAL GRAVITY VECTOR.			
5 DESCRIPTION OF EQUIPMENT STATUS CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  Stage alignment measurements shall be made after the stage has been aligned to the launcher. Stage targets are scanned optically to obtain target displacement data. Displacement data is translated to angular data which reflects the alignment of the stage centerline to the local gravity vector.			
6 TEST REQUIREMENTS  MSFC - 3.4.0.3 LV - B.1.3.3			
7 PERFORM EFFECTIVITY		8 ORGANIZATION	
10-6-72 To add Test Requirement 1.3.3		CCSD	
8-14-72 Hazardous Level Change Due to Operating Height		CCSD	
9. DATE		10. DATE	
10-4-71		10-4-71	
11. ORGANIZATION		12. APPROVAL DATE	
60-606-12		10/6/71	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1 TEST TITLE  MEASURE SATURN IB STAGE ALIGNMENT		2 KSC TEST NUMBER V-23276	
3 EFFECTIVITY 206 & SUBS		4 TEST PURPOSES 2.0 Hours	
5 LOCATION Launcher COMPUTER PROC IDENTIFICATION Pedestal-VAB N/A		6 TEST REQUIREMENTS	
7 OTHER APPLICABLE REFERENCE DOCUMENTATION  Dwg. 10M04167			
8 ITEM CONTINUATION			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE  FLIGHT CONTROL COMPUTER REDUNDANCY TEST (CTB2)		2. KSC TEST NUMBER V-23279 3. EFFECTIVITY AS-206 & SUBS	
4. TEST OBJECTIVES A. TO DETAIL THE STEPS NECESSARY TO PREPARE THE FLIGHT CONTROL COMPUTER AND COMPUTER INPUT SUBSTITUTE PANELS FOR AUTOMATIC OPERATION. B. TO DETAIL THE STEPS NECESSARY TO LOAD AND EXECUTE THE AUTOMATIC COMPUTER REDUNDANCY TEST FROM THE SANDERS DISPLAY STATION. C. THE OBJECTIVE OF THIS TEST IS TO VERIFY CONTROL COMPUTER INPUT SIGNAL REDUNDANT PATHS ARE OPERATING PROPERLY.			
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. <u>DESCRIPTION:</u> A. ALL DISCRETE SWITCHES ON THE FLIGHT CONTROL COMPUTER, CRG PANEL, AND COMPUTER INPUT SUBSTITUTE PANELS ARE PLACED IN THE AUTO POSITION. B. FLIGHT CONTROL RECORDERS ARE MADE READY TO RECORD THE AUTOMATIC TEST COMMANDS. C. AUTOMATIC FLIGHT CONTROL COMPUTER REDUNDANCY TEST (CTB2) IS REQUESTED, LOADED, AND EXECUTED FROM THE GROUND COMPUTER SANDERS DISPLAY CONSOLE (NO. 4). D. FLIGHT CONTROL COMPUTER INPUT STIMULUS WILL BE SUPPLIED FROM THE LVDC/LVDA AND CONTROL/EDS RATE GYRO SYSTEMS. E. CONTROL OF THE VARIOUS RELAY COMBINATIONS WILL BE ATTAINED BY COMMANDS TO THE CONTROL COMPUTER RELAY MATRIX. THE CONTROL COMPUTER COMPARATORS, VALVE CURRENTS AND RELAY CURRENTS WILL BE MONITORED THROUGHOUT THE PERFORMANCE OF THIS TEST. F. LVDA LADDER OUTPUTS WILL BE USED TO CHECK THE SPACECRAFT REDUNDANT RELAYS IN THE FLIGHT CONTROL COMPUTER.  (CONTINUED IN BLOCK 18, PAGE 2)  PHASE: <u>III, IV</u>  <div style="display: flex; justify-content: space-between;"><div>TEST REQUIREMENTS</div><div>MSFC: 7921601 0.3.1.2.2.5.1 0.3.1.2.2.6.1 0.3.1.2.2.6.2</div><div>TM-011-001-2H B.7.0.1</div></div>			
B 8/27/74 REVISED MSFC REQUIREMENTS		C.R. Ramey 8/27/74 S. B. Hays 8/27/74	
A 02-29-3 REVISE BLOCK 16		S. B. Hays 8/27/74 D.W. F. 8/27/74	
6. REV. DATE REASON 7. CONTRACTOR APPROVAL 8. ORGANIZATION 9. DATE		Contractor Approval KSC Approval	
10. NASA-KSC APPROVAL 11. ORGANIZATION 12. APPROVAL DATE		10. DATE 11. DATE	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE  FLIGHT CONTROL COMPUTER REDUNDANCY TEST (CTB2)		2. KSC TEST NUMBER V-23279 3. EFFECTIVITY AS-206 & SUBS	
13. LOCATION LC-39		14. COMPUTER PROC. IDENTIFICATION CTB2	
15. EST. TEST TIME 6 MEN - 1 HOUR		16. SUPPORT REQUIREMENTS	
INTERSTAGE:		1U GROUND AND STAGE POWER S-1VB STAGE POWER	
OFF-COMPLEX:		N/A	
ON-COMPLEX:		FACILITY COMMUNICATIONS (OIS) LVDC/LVDA SYSTEM	
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  NONE			
18. ITEM CONTINUATION  (CONTINUED FROM BLOCK 5, PAGE 1)  <u>CONFIGURATION</u> A. THE LVDC/LVDA FLIGHT CONTROL COMPUTER, CONTROL/EDS RATE GYROS AND THE CONTROL SIGNAL PROCESSOR INSTALLED IN THE LAUNCH VEHICLE.  THE SPACECRAFT SIMULATOR WILL BE INSTALLED FOR THE SPACECRAFT RELAY REDUNDANCY OPTION. B. S-1VB HYDRAULIC POWER WILL BE OFF FOR THIS TEST. C. S-1B HYDRAULIC POWER MAY BE ON WHEN THIS TEST IS PERFORMED AS A PART OF COUNTDOWN EXERCISES.  <u>EQUIPMENT STATUS</u> A. THE FOLLOWING TEST EQUIPMENT WILL BE USED:  N/A B. THE FOLLOWING PROCEDURES/TEST MUST BE COMPLETED PRIOR TO PERFORMING THIS TASK:  1. V-23153 2. V-23281			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE FLIGHT CONTROL COMPUTER & CONTROL ACCELEROMETER RAMP GENERATOR CALIBRATION		2. KSC TEST NUMBER V-23280	
3. EFFECTIVITY AS-206 & SUBS			
4. TEST OBJECTIVES TO VERIFY PROPER OPERATION OF THE DIGITAL RAMP GENERATORS IN THE ML ESE			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. <u>DESCRIPTION:</u> THIS PROCEDURE PROVIDES STEPS FOR ADJUSTING THE POWER SUPPLY OUTPUTS, ADJUSTING THE AMPLITUDE, AND VERIFYING THE SLOPE OF THE RAMP GENERATORS. <u>EQUIPMENT STATUS</u> A. THE FOLLOWING TEST EQUIPMENT WILL BE USED: 1. DVM, H/P 3440A W/3445A PLUG IN OR EQUIVALENT. 2. DECADE BOXES (2 EA) CLARO - STAT 240-C OR EQUIVALENT. 3. ONE H/P ELECTRONIC COUNTER MODEL 5532L OR EQUIVALENT. 4. ONE PORTABLE RECORDER, BRUSH MARK 280, OR EQUIVALENT. B. THE FOLLOWING PROCEDURES/TEST MUST BE COMPLETED PRIOR TO PERFORMING THIS TASK: N/A <u>CONFIGURATION</u> N/A <u>TEST REQUIREMENTS</u> MSFC: 7921601 0.3.1.2.3.3.2			
A 6/27/74 REVISED MSFC REQUIREMENTS		C.R. Relling 4/12/74 KSC Approval	
6. REV DATE	PERSON	Contractor Approval	
7. CONTRACTOR APPROVAL J.H. [Signature] 4/12/74	8. ORGANIZATION IBM	9. DATE 4/12/72	
10. NASA KSC APPROVAL George W. Ely	11. ORGANIZATION LV-GDC-33	12. APPROVAL DATE 4/13/72	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE FLIGHT CONTROL COMPUTER AND CONTROL ACCELEROMETER RAMP GENERATOR CALIBRATION		2. KSC TEST NUMBER V-23280	
3. EFFECTIVITY AS-206 & SUBS			
13. LOCATION LC-39	14. COMPUTER PROC. IDENTIFICATION NOT REQUIRED	15. EST. TEST TIME 3 MEN - 4 HOURS	
16. SUPPORT REQUIREMENTS INTERSTAGE: IU GROUND POWER OFF-COMPLEX: N/A ON-COMPLEX: QUALITY ASSURANCE FACILITY COMMUNICATIONS (OIS) ESE DDAS			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION NONE			
18. ITEM CONTINUATION			



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 3	
1. TEST TITLE FLIGHT CONTROL COMPUTER SUBSYSTEM TEST		2. KSC TEST NUMBER V-23281	
		3. EFFECTIVITY AS-206 & SUBS	
4. TEST OBJECTIVES TO PERFORM INPUT POWER VERIFICATION TEST, STATIC NULL OFF-SET TEST, SPACECRAFT INPUT LIMITER TEST, SIVB BURN ENABLE REDUNDANCY CHECK, SIB MODE COMMAND AT LIFTOFF CHECK, PSI AND PHI DOT INPUT REDUNDANCY TEST, T.M. OUTPUT VERIFICATION, AND PSI MEASURING CALIBRATION.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. DESCRIPTION: A. THE REDUNDANT INPUT POWER FOR FLIGHT CONTROL COMPUTER WILL BE TESTED FOR PROPER MAGNITUDE AND POLARITY PRIOR TO INITIAL UNIT CABLE CONNECTIONS. B. FLIGHT CONTROL COMPUTER OPERATION IS VERIFIED UTILIZING EACH OF ITS INDIVIDUAL REDUNDANT POWER INPUT CAPABILITIES. C. THE STATIC NULL OFFSETS OF THE FLIGHT CONTROL COMPUTER WILL BE VERIFIED AND RECORDED. D. VERIFICATION OF THE FCC TELEMETRY FOR TEMP, MODES, SERVO, AND SPATIAL COMPARATORS, POWER INPUTS, AND INVERTER DETECTOR. E. CALIBRATE WITH PSI INPUTS, THE FCC PSI PANEL METERS AND FCC ANALOG PSI RECORDER CHANNELS. MEASURING STATION WILL VERIFY AND RECORD PSI MEASUREMENTS.  (CONTINUED IN BLOCK 18, PAGE 2)  TEST REQUIREMENTS MSFC: 7921601 TM-011-001-2H PHASE: III 0.3.1.2.0.4.1 / B 7.0.1 / 0.3.1.2.0.6.1 / 0.3.1.2.0.6.1.2 / 0.3.1.2.2.1.1 / 0.3.1.2.2.0.3 /			
6	5/27/74	REVISED MSFC REQUIREMENTS	C. R. Ramsey 4/9/79 B. W. Ely
7	10/18/72	REVISE TEST REQUIREMENTS AND BLOCK 18	R. L. Hunter 4/12/72 B. W. Ely
8 REV.	DATE	REASON	Contractor Approval KSC Approval
7	4/12/72	10M	4/12/72
10 NASA KSC APPROVAL	DATE	11 ORGANIZATION	12 APPROVAL DATE
George H. Ely	4/13/72	LV-GDC-33	4/13/72

KSC FORM 33-330-17-01

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 3	
1. TEST TITLE FLIGHT CONTROL COMPUTER SUBSYSTEM TEST		2. KSC TEST NUMBER V-23281	
		3. EFFECTIVITY AS-206 & SUBS	
13. LOCATION LCC/IU/LC-39		14. COMPUTER PROC IDENTIFICATION N/A	
		15. TEST TIME 6 MEN - 10 HOURS	
16. SUPPORT REQUIREMENTS INTERSTAGE: IU GROUND AND STAGE POWER SIVB STAGE POWER  OFF-COMPLEX: N/A  ON-COMPLEX: QUALITY ASSURANCE FACILITY COMMUNICATIONS (OIS) LVDC/LVDA SYSTEMS IU ELECTRICAL IU MEASURING SIVB MEASURING			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION NONE			
18. ITEM CONTINUATION BLOCK 5 CONTINUED FROM PAGE 1  F. THE CAPABILITY OF THE FLIGHT CONTROL COMPUTER TO LIMIT THE SPACECRAFT STEERING COMMAND (SIMULATED) VOLTAGE LEVELS WILL BE VERIFIED.  G. THE REDUNDANT INPUT CAPABILITY TO ENABLE SIVB BURN MODE WILL BE VERIFIED.  H. THE ABILITY TO COMMAND THE FLIGHT CONTROL COMPUTER TO THE S-IB BURN MODE AT LIFTOFF WILL BE VERIFIED.  I. PSI AND PHI DOT REDUNDANT INPUT CIRCUITRY WITHIN THE FCC WILL BE VERIFIED.  EQUIPMENT STATUS  A. THE FOLLOWING TEST EQUIPMENT WILL BE USED: 1. INTERRUPT BOX-8 PIN-P/N JB2P0193 OR EQUIVALENT. 2. INTERRUPT BOX-23 PIN-P/N JB2P0217 OR EQUIVALENT. 3. INTERRUPT BOX-30 PIN-P/N JB2P0231 OR EQUIVALENT. 4. INTERRUPT BOX-61 PIN-P/N JB2P0229 OR EQUIVALENT. 5. INTERRUPT BOX-55 PIN-P/N JB2P0228 OR EQUIVALENT. 6. DIGITAL VOLTMETER, HP3440, OR EQUIVALENT. 7. SIMPSON 260.  B. THE FOLLOWING PROCEDURES/TEST MUST BE COMPLETED PRIOR TO PERFORMING THIS TASK:  NONE			

APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET (CONTINUATION SHEET)		PAGE <u>3</u> OF <u>3</u>
1. TEST TITLE		2. KSC TEST NUMBER
FLIGHT CONTROL COMPUTER SUBSYSTEM TEST		V-23281
		3. EFFECTIVITY
		AS-206 & SUBS
ITEM CONTINUATION		
BLOCK 5 CONTINUED FROM BLOCK 18, PAGE 2		
<u>CONFIGURATION</u>		
FLIGHT CONTROL COMPUTER INSTALLED IN LAUNCH VEHICLE.		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE CONTROL ACCELEROMETER FUNCTIONAL, SCALE FACTOR, POLARITY AND MEASURING CALIBRATION TEST		2. KSC TEST NUMBER V-23282	
4. TEST OBJECTIVES THE OBJECTIVES OF THIS TEST PROCEDURE ARE: 1. TO PERFORM A FUNCTIONAL TEST TO VERIFY SCALE FACTORS. 2. TO PERFORM A POLARITY CHECK. 3. TO VERIFY THE MEASURING CALIBRATION CURVES AND TO CALIBRATE THE FLIGHT CONTROL RECORDER GAMMA DOUBLE - DOT CHANNELS AND THE GSE GAMMA DOUBLE - DOT PANEL METERS.		3. EFFECTIVITY 206 & SUBS	
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. <u>DESCRIPTION:</u> 1. THE CONTROL ACCELEROMETER WILL BE CHECKED FOR FUNCTIONAL OPERATION AND SCALE FACTORS BY THE USE OF TEST TABLE(S) INSTALLED IN THE IU STAGE. 2. THE CORRECT POLARITY WILL BE VERIFIED BY PHYSICALLY TILTING THE CONTROL ACCELEROMETER WHILE ELECTRICALLY CONNECTED IN FLIGHT CONFIGURATION IN THE IU STAGE. 3. ESE TEST SIGNALS (DIGITAL RAMP GENERATOR RAMP COMMANDS) WILL DRIVE THE CONTROL ACCELEROMETER OUTPUT SIGNAL TO SEVERAL PREDETERMINED VALUES. AT EACH OF THESE VALUES, THE IU MEASURING STATION WILL VALIDATE COMPONENT PERFORMANCE WITH MEASUREMENT CALIBRATION CURVES, AND THE FLIGHT CONTROL RECORDERS AND ASSOCIATED PANEL METERS WILL BE CALIBRATED.  PHASE: III  TEST REQUIREMENTS MSFC: 7921601  0.3.1.2.0.4.1 0.3.1.2.3.3.1 0.3.1.2.3.3.4 0.3.1.2.0.3.1  MSFC: TM-011-001-2H B.1.1.1.1.2			
C 8-27-74 REVISED MSFC REQUIREMENTS		D R Rasmussen	
B 10-29-74 REVISED BLOCK 10		S B Hanks	
A 5/18/72 REVISED BLOCKS 1, 4, 5 AND 16		J H Hanks	
E REASON S/H.D. PESTER 184 - 918		9. DATE 4/12/72	
10. APPROVAL DATE S/H.W. ELY 4/13/72		11. ORGANIZATION 348-11-71 LV-GUX-55	
		12. APPROVAL DATE 4/13/72	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE CONTROL ACCELEROMETER FUNCTIONAL, SCALE FACTOR, POLARITY AND MEASURING CALIBRATION TEST		2. KSC TEST NUMBER V-23282	
13. LOCATION LC 39		14. COMPUTER PROC. IDENTIFICATION NOT REQUIRED	
15. SUPPORT REQUIREMENTS INTERSTAGE: GROUND POWER, IU POWER, SIVB POWER OFF-COMPLEX: N/A ON-COMPLEX: QUALITY ASSURANCE		16. EST. TEST TIME 4 MEN - 4 HOURS	
17. OTHER APPLICABLE REFERENCE DOCUMENTATION NONE			
18. ITEM CONTINUATION			

REV 32



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE  FUNCTIONAL CHECK OF ESE RECORDERS <div style="text-align: right;">(STANDBY)</div>		2. KSC TEST NUMBER V-23283 3. EFFECTIVITY AS REQUIRED	
4. TEST OBJECTIVES  A. TO VERIFY THAT THE LCC RECORDER SYSTEM IS READY TO SUPPORT VEHICLE TESTING.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  <u>DESCRIPTION:</u>  A. THIS PROCEDURE WILL VERIFY THE COMPATIBILITY BETWEEN THE ANALOG RECORDER CONTROL PANEL AND THE RECORDER SYSTEM. ALSO THE CALIBRATION VOLTAGES WILL BE SET UP.  B. BASELINE CHARTS WILL BE ESTABLISHED FOR THE FUNCTIONAL TEST.  C. THIS PROCEDURE WILL VERIFY THE FUNCTIONAL OPERATION AND CALIBRATION OF THE RECORDER SYSTEM PRIOR TO TESTING PERFORMED AFTER MEASURING CALIBRATION.  <u>EQUIPMENT STATUS</u>  A. THE FOLLOWING TEST EQUIPMENT WILL BE USED:  1. DVM, H/P 3440A W/3445A PLUG IN OR EQUIVALENT.  B. THE FOLLOWING PROCEDURES/TEST MUST BE COMPLETED PRIOR TO PERFORMING THIS TASK:  1. N/A  <u>CONFIGURATION:</u> N/A  <div style="text-align: right;"><u>TEST REQUIREMENTS</u> MSFC: N/A</div>			
6. REV.		DATE	
7. CONTRACTOR APPROVAL		REASON	
8. ORGANIZATION		9. DATE	
10. NAVA KSC APPROVAL		11. ORGANIZATION	
12. APPROVAL DATE		13. DATE	

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE  FUNCTIONAL CHECK OF ESE RECORDERS <div style="text-align: right;">(STANDBY)</div>		2. KSC TEST NUMBER V-23283 3. EFFECTIVITY AS REQUIRED	
13. LOCATION LC-39		14. COMPUTER PROC. IDENTIFICATION NOT REQUIRED	
15. EST. TEST TIME 2 MEN-4 HOURS		16. SUPPORT REQUIREMENTS  INTERSTAGE: IU GROUND POWER  OFF COMPLEX: N/A  ON-COMPLEX: QUALITY ASSURANCE	
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  NONE			
18. ITEM CONTINUATION			

KSC OPERATIONS  
APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET

PAGE 1 OF 2

1. TEST TITLE IU TRANSPORTATION, ERECTION AND MATING	2. KSC TEST NUMBER V-24223
3. EFFECTIVITY 206 & SUBS	

4. TEST OBJECTIVES

TO TRANSPORT THE INSTRUMENT UNIT FROM THE STORAGE AREA TO THE HOISTING AREA. HOIST THE IU TO THE S-IVB STAGE/SWS AND ATTACH MATING HARDWARE.

5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION

THIS TEST ☒ DOES ☐ DOES NOT CONTAIN HAZARDOUS OPERATIONS.

PREREQUISITE: S-IVB FORWARD ACCESS KIT IS INSTALLED AND THE S-IVB MATING SURFACE IS PREPARED TO RECEIVE THE IU.

THE IU IS TRANSPORTED TO THE HOISTING AREA. THE HOISTING TOOL IS ATTACHED TO THE UPPER PROTECTIVE RING. THE LOWER PROTECTIVE RING HARDWARE IS REMOVED. THE IU IS LIFTED, LEVELED AND MATING SURFACE IS PREPARED FOR MATING. THE IU IS HOISTED TO THE SIVB STAGE AND THE MATING HARDWARE IS INSTALLED AND TORQUED.

THE UMBILICAL DOOR LATCH SHALL BE VERIFIED PRIOR TO IU ERECTION.

CONFIGURATION: IU ON TRANSPORTER IN STORAGE AREA.

PHASE: 1A, 11

TEST REQUIREMENTS

TM-011-001-211: B.1.3.1 B.1.3.2	MSFC: 7921601 0.3.3.2.3 0.3.3.3 0.3.3.3.1
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F	8/5/74	REVISED BLOCKS 3, 5 & 17	<i>[Signature]</i>	<i>[Signature]</i>
E	1/31/73	REVISE MSFC REQ'TS & BLOCK 17	<i>[Signature]</i>	<i>[Signature]</i>
D	6/19/72	REVISE MSFC REQ'TS & BLKS 4, 5, 15 & 17	<i>[Signature]</i>	<i>[Signature]</i>
C	4/19/72	REVISE BLKS. 3, 4, 5, 16 & 17	S/G. LECKIE	S/P. SCHMID
B	12/12/73	REVISE MSFC REQUIREMENTS & BLOCK 16	S/J. PEURRUNG	S/P. SCHMID
A	5/23/71	REVISE MSFC REQUIREMENTS	S/J. PEURRUNG	S/P. SCHMID

6. BY	DATE	REASON	Contractor Approval	KSC Approval
7. CONTRACTOR APPROVAL		8. ORGANIZATION	9. DATE	
S/ W. B. HUNT		IBM - K73	SEPTEMBER 28, 1967	
10. NASA KSC APPROVAL		11. ORGANIZATION	12. APPROVAL DATE	
S/ P. W. SCHMID		JD - 25	OCTOBER 2, 1967	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)

PAGE 2 OF 2

1. TEST TITLE IU TRANSPORTATION, ERECTION AND MATING	2. KSC TEST NUMBER V-24223
3. EFFECTIVITY 206 & SUBS	

13. LOCATION VAB	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 6 MEN - 13 HOURS
---------------------	--	--

16. SUPPORT REQUIREMENTS

INTERSTAGE: S-IVB MECH

OFF-COMPLEX: BENDIX SHOPS

ON-COMPLEX: 250/25 TON CRANE  
PLATFORMS  
VAB DOORS  
IBM QA  
KSC SAFETY  
KSC SECURITY  
SWING ARMS  
IBM MECHANICAL

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

TM-011-001-2H	MIL-C-5541	V-26547	60C18209	60C18259
HT-322-13000	7921601	V-34046	60C18210	60C18250
K-V-053	13M50202		60C18211	60C18251

18. ITEM CONTINUATION

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE  INSTRUMENT UNIT DEMATING (STANDBY)		2. KSC TEST NUMBER V-24225	
		3. EFFECTIVITY AS REQUIRED	
4. TEST OBJECTIVES  TO REMOVE THE INSTRUMENT UNIT FROM THE S-IVB AND TRANSPORT IT TO STORAGE.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THE FOLLOWING ITEMS ARE VERIFIED: THERMAL CONDITIONING SYSTEM HAS BEEN DRAINED AND PURGED, ALL CRITICAL COMPONENTS HAVE BEEN REMOVED, ALL INTERCONNECTING ENVIRONMENTAL CONTROL AND ELECTRICAL CONNECTIONS BETWEEN THE IU AND S-IVB HAVE BEEN DISCONNECTED, UMBILICAL CONNECTIONS HAVE BEEN REMOVED. THE IU HOISTING SLING, UPPER PROTECTIVE RING (IF NECESSARY) AND TRANSPORTER ARE POSITIONED UNDER THE CRANE HOOK, AND PREPARED FOR ERECTION.  THE HOISTING SLING WITH UPPER PROTECTION RING (IF NECESSARY) ARE ERECTED, POSITIONED OVER THE IU AND LOWERED INTO PLACE. AFTER ATTACHMENT TO THE IU, THE IU/S-IVB MOUNTING HARDWARE IS REMOVED, AND, THE IU IS ELEVATED AND LOWERED TO THE TRANSPORTER. THE IU IS SECURED IN PLACE ON THE TRANSPORTER AND THE PROTECTION COVERS INSTALLED. THE HOISTING SLING IS REMOVED AND THE IU AND SLING TRANSPORTED BACK TO STORAGE.  CONFIGURATION: IU ERECTED ON S-IVB			
TEST REQUIREMENTS  MSFC: N/A			
6. REV. DATE		REASON	
7. CONTRACTOR APPROVAL  [Signature]		8. ORGANIZATION IBM-906	
9. DATE 29 SEPTEMBER 1967		10. ORGANIZATION SD-25	
11. NASA/KSC APPROVAL  [Signature]		12. APPROVAL DATE 10/6/67	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE INSTRUMENT UNIT DEMATING (STANDBY)		2. RSC TEST NUMBER V-24225
		3. EFFECTIVITY AS REQUIRED
12. LOCATION VAB	14. COMPUTER PROC. IDENTIFICATION N/A	18. EST. TEST TIME 6 MEN 12 HOURS
16. SUPPORT REQUIREMENTS INTERSTAGE: S-IVB MECH. OFF-COMPLEX: BENDIX SHOPS ON-COMPLEX: 750/25 TON CRANE PLATFORMS VAB DOORS IBM QA KSC SAFETY SECURITY SWING ARMS		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION HT-322-13000 K-V-053		
18. ITEM CONTINUATION		



KSC OPERATIONS  
APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET

PAGE 1 OF 2

1. TEST TITLE  IU PNEUMATIC & TCS TEST	2. KSC TEST NUMBER V-24228 3. EFFECTIVITY 206 & SUBS
--	--

4. TEST OBJECTIVES  
TO VERIFY THE IU PNEUMATIC SYSTEM AND THERMAL CONDITIONING SYSTEM FLOWS, PRESSURES AND TEMPERATURES ARE WITHIN LIMITS.

5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION  
THIS TEST ☐ DOES ☒ DOES NOT CONTAIN HAZARDOUS OPERATIONS.  
DURING NORMAL POWER ON, IN CLOSED LOOP CONFIGURATION, THE SYSTEMS ARE TESTED BY VARYING THE GROUND COOLANT TEMPERATURE AND MONITORING OR RECORDING CRITICAL FLOW RATES, TEMPERATURES AND PRESSURES. ADDITIONAL MEASUREMENTS ARE RECORDED FOR REFERENCE. CAPABILITY TO EMERGENCY VENT AIRBORNE IU GN2 SYSTEMS TO 1000 PSI IS VERIFIED, INCLUDING VENTING WITH GROUND POWER ONLY.  
CONFIGURATION: VEHICLE IS ERECTED, STAGE POWER APPLIED, CLOSED LOOP CONFIGURATION.

TEST REQUIREMENTS

AS-206 & SUBS                      TM-011-001-2H  
MSFC: 7921601                      B.1.7.1.2 ✓

0.3.5.2.5.1 ✓  
0.3.5.2.5.1.1 ✓  
0.3.5.2.5.1.2.1 ✓  
0.3.5.3.3 ✓  
0.3.5.2.5.3 ✓  
0.3.5.2.5.2 ✓  
0.3.5.2.5.1.2.2.1 ✓  
0.3.5.2.5.1.2.2.2 ✓

PHASE: III

SEE BLOCK 18 FOR REVISION HISTORY

6. REV. DATE	REASON	Contractor Approval	KSC Approval
7. CONTRACTOR APPROVAL S/A. B. HUNT	8. ORGANIZATION IBM - K73	9. DATE OCTOBER 3, 1967	
10. NASA-KSC APPROVAL S/P. W. SCHMID	11. ORGANIZATION JD-25	12. APPROVAL DATE OCTOBER 6, 1967	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)

PAGE 2 OF 2

1. TEST TITLE  IU PNEUMATIC & TCS TEST	2. KSC TEST NUMBER V-24228 3. EFFECTIVITY AS-209 & SUBS
--	--

13. LOCATION VAB	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 3 MEN, 4 HOURS
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16. SUPPORT REQUIREMENTS  
  
INTERSTAGE: S-IVB STAGE POWER (EXCEPT AS-513 & AS-515)  
OFF-COMPLEX: N/A  
ON-COMPLEX: IBM QA  
IBM MEASURING  
IU STAGE POWER  
IBM MECHANICAL  
IBM ELECTRICAL NETWORKS

17. OTHER APPLICABLE REFERENCE DOCUMENTATION  
MSFC-MAN-008 K-V-053  
MSFC-MAN-014 7921601  
MSFC-MAN-036

18. ITEM CONTINUATION

K	DATE	REASON	CONTR. APP.	KSC APP.
J	8/5/74	REVISED BLOCKS 3, 5 & 17	<i>[Signature]</i>	<i>[Signature]</i>
I	2/17/73	REVISE BLOCKS 5 & 17	<i>[Signature]</i>	<i>[Signature]</i>
H	9/18/72	REVISED BLOCKS 3, 5, & 16	<i>[Signature]</i>	<i>[Signature]</i>
G	4/19/72	REVISED BLOCKS 3, 5, & 17	S/G. LECKIE	S/P. SCHMID
F	3/24/72	REVISED PER SPEC & CRITERIA	S/G. LECKIE	S/P. SCHMID
E	9/7/71	REVISE PER SPEC & CRITERIA	S/G. LECKIE	S/P. SCHMID
D	6/16/71	REVISE MSFC REQUIREMENTS	S/G. LECKIE	S/P. SCHMID
C	12/12/69	REVISE MSFC REQUIREMENTS, BLK. 5016	S/J. PEURUNG	S/P. SCHMID
B	5/23/69	REVISE MSFC REQUIREMENTS	S/J. PEURUNG	S/P. SCHMID
A	9/20/68	ADDITION OF LV REQUIREMENT	S/J.H. HANSEN	S/P. SCHMID
REV.	8/5/68	UPDATE MSFC REQUIREMENTS	S/J.H. HANSEN	S/P. SCHMID

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE IU PNEUMATIC SYSTEM LP TEST		2. KSC TEST NUMBER V-24298	
		3. EFFECTIVITY AS-206 & SUBS	
4. TEST OBJECTIVES TO VERIFY THE PNEUMATIC SYSTEM IS LEAK TIGHT AND TO FUNCTIONALLY CHECK THE PRESSURE SWITCH AND/OR ADJUST THE FIRST STAGE REGULATOR			
5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  GN <sub>2</sub> IS SUPPLIED THROUGH THE PNEUMATIC CONSOLE, ACROSS THE SWING ARM TO PRESSURIZE THE AIR BEARING AND COOLING GN <sub>2</sub> SYSTEMS INCREMENTS TO 1700 PSIG. GN <sub>2</sub> LINES AND COMPONENTS ARE LEAK CHECKED USING LEAK DETECTOR SOLUTION. THE OUTLET PRESSURE OF THE FIRST STAGE REGULATOR IS MONITORED AND ADJUSTED, IF REQUIRED, TO MAINTAIN A PRESSURE OF 16.5 ± 0.5 PSIA. THE OUTLET PRESSURE OF THE ST-124 AIR BEARING REGULATOR IS MONITORED TO VERIFY LINE PRESSURE IS NOT EXCESSIVE. THE ACTUATION/DEACTUATION PRESSURE OF THE PRESSURE SWITCH IS MONITORED.  THE ST-124 PLATFORM PURGE LINE IS PRESSURIZED AND LEAK CHECKED. A TEST PANEL IS CONNECTED TO THE BLEED ASSEMBLY TO PRESSURIZE THE LINES AND FITTINGS DOWNSTREAM OF THE FIRST STAGE REGULATOR TO 20 PSIG FOR LEAK TESTING.  ALL DATA IS RECORDED ON A DATA SHEET.  CONFIGURATION: VEHICLE STACKED, ST-124M EITHER INSTALLED OR NOT INSTALLED, STAGE POWER IS NOT APPLIED.  (SEE PAGE 2, BLOCK 10 FOR TEST REQUIREMENTS)			
F	8-6-74	REVISED BLOCKS 3, 17 & MSFC REQUIREMENTS	<i>W.R. Riley</i> <i>P.W. Schmid</i>
E	4-19-72	REVISED BLOCKS 3, 5, 16 & 17	G.E. LECKIE P.W. SCHMID
D	1-7-70	REVISE MSFC REQUIREMENTS	J.C. PEURRUNG P.W. SCHMID
C	5-23-69	REVISE MSFC REQUIREMENTS	J.C. PEURRUNG P.W. SCHMID
B	3-26-69	REVISE CONFIGURATION	J.C. PEURRUNG P.W. SCHMID
A	10-15-68	ADDITION OF MSFC DOCUMENT NUMBERS	J. H. HANSEN P. SCHMID
6. REV.	DATE	REASON	Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL S/W.B. HUNT		8. ORGANIZATION IBM - 906	9. DATE SEPTEMBER 29, 1967
10. NASA APPROVAL S/P.W. SCHMID		11. ORGANIZATION JD-25	12. APPROVAL DATE 10-10-67

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE IU PNEUMATIC SYSTEM LP TEST		2. KSC TEST NUMBER V-24298	
		3. EFFECTIVITY AS-206 & SUBS	
13. LOCATION LC 39 A, B, C	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 2 MEN - 10 HOURS	
16. SUPPORT REQUIREMENTS  INTERSTAGE: N/A  OFF-COMPLEX: N/A  ON-COMPLEX: IBM QA IU VEHICLE NET HP GAS OIS KSC SAFETY IBM MECHANICAL			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION MSFC-PROC-195 MSFC-MAN-014 TM-011-001-2H MSFC-SPEC-164 10419906 7921601 MC-245 K-V-053			
18. ITEM CONTINUATION  (BLOCK 5 CONTINUED FROM PAGE 1)  <u>TEST REQUIREMENTS</u>  MSFC: 7921601 0.3.5.2.1.3 ✓ 0.3.5.3.1.1 ✓ 0.3.5.3.1.1.1 ✓ 0.3.5.3.5.1 ✓ 0.3.5.5.2 ✓  PHASE II			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE IU PNEUMATIC SYSTEM HP TEST		2. KSC TEST NUMBER V-24299	
		3. EFFECTIVITY AS-206 & SUBS	
4. TEST OBJECTIVES TO VERIFY THE PNEUMATIC SYSTEM IS LEAK TIGHT AND TO FUNCTIONALLY CHECK THE SYSTEM FLOW RATES AND PRESSURES.			
5. TEST DESCRIPTION/EQUIPMENT STATUS CONFIGURATION <p>THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>THE HIGH PRESSURE REGULATOR ON THE PNEUMATIC CONSOLE IS ADJUSTED TO SUPPLY GN<sub>2</sub> TO THE PNEUMATIC SYSTEM AT 3000 PSIG. THE AREA IS CLEARED AND THE SYSTEM IS PRESSURIZED BY REMOTE OPERATION FROM THE FIRING ROOM PANEL. TEMPERATURE AND PRESSURE IS STABILIZED FOR A MINIMUM OF 2 HOURS, THE FILL VALVES ARE CLOSED AND THE SPHERES PRESSURE BLEED RATE IS MONITORED FOR 2.5 HOURS.</p> <p>AT THE END OF 2.5 HOURS THE PRESSURE IS REDUCED TO 1700 PSIG AND THE PNEUMATIC SYSTEM LINES, FITTINGS, ETC., ARE LEAK CHECKED USING LEAK DETECTOR SOLUTION.</p> <p>CONFIGURATION: VEHICLE ERECTED WITH STAGE POWER APPLIED.</p> <p>PHASE: III, IV</p> <p>(SEE BLOCK 18 FOR MSFC REQUIREMENTS)</p>			
6. REV.	DATE	REASON	9. DATE
S/W.B. HUNT		IBM - 906	3 OCTOBER 1967
S/P. SCHMID		JD - 25	10/16/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE IU PNEUMATIC SYSTEM HP TEST		2. KSC TEST NUMBER V-24299	
		3. EFFECTIVITY AS-206 & SUBS	
13. LOCATION LC 39A, B, C	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 2 MEN - 8 HOURS	
16. SUPPORT REQUIREMENTS <p>INTERSTAGE: SIVB STAGE POWER</p> <p>OFF-COMPLEX: N/A</p> <p>ON-COMPLEX: IBM QA MEASUREMENTS IU STAGE POWER KSC SAFETY DDAS OIS HP GAS IBM MECHANICAL</p>			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION <p>MSFC-MAN-014 7921601</p> <p>MSFC-MAN-008 TM-011-001-2H</p> <p>10Z22204</p>			
18. ITEM CONTINUATION (BLOCK 5 CONTINUED FROM PAGE 1)			
TEST REQUIREMENTS			
MSFC: 7921601			
0.3.5.2.1.3.1 0.3.5.3.1.2			
0.3.5.2.7 0.3.5.3.1.3			
0.3.5.2.7.1 0.3.5.3.1.3.1			
0.3.5.2.7.2 0.3.5.3.2			
0.3.5.2.7.1.1 0.3.5.3.2.1			
0.3.5.3.2.2			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE IU WATER SYSTEM GN <sub>2</sub> TEST		2. KSC TEST NUMBER V-24391	
		3. EFFECTIVITY AS-206 & SUBS	
4. TEST OBJECTIVES TO VERIFY THAT THE IU WATER SYSTEM AND THE GN <sub>2</sub> SYSTEM DOWNSTREAM OF THE 1ST STAGE REGULATOR IS LEAK FREE.			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. THE GN <sub>2</sub> SYSTEM DOWNSTREAM FROM THE 1ST STAGE REGULATOR IS LEAK CHECKED AT 20 PSIG. THE WATER SYSTEM IS PRESSURIZED (WITH THE WATER VALVE CLOSED) TO 22.5 +0.0 -0.5 PSIG. THE WATER SYSTEM IS THEN LEAK CHECKED FROM THE WATER ACCUMULATOR TO THE WATER VALVE. ADDITIONALLY, WATER VALVE SEAT LEAKAGE IS CHECKED AT THE SUBLIMATOR VENT VALVE. THE SYSTEM IS THEN DEPRESSURIZED AND RE-PRESSURIZED TO 7.0 ± 0.5 PSIG. WITH THE WATER VALVE OPEN. THE WATER SYSTEM IS THEN LEAK CHECKED DOWN STREAM OF THE WATER VALVE. CONFIGURATION: VEHICLE STACKED WITH STAGE POWER REMOVED.  <u>TEST REQUIREMENTS</u> MSFC: 7921601 0.3.5.2.1.2 0.3.5.2.1.2.1 0.3.5.2.6.4 0.3.5.2.1.3  PHASE: II, III OR IV			
E	8-6-74	REVISED BLOCKS 3, 5 & 17	<i>D. K. Riley</i> <i>P. Schmid</i>
D	8-3-72	REVISED BLOCKS 4, 5, 15 & 17	G. LECKIE P. SCHMID
K	4-19-72	REVISED BLOCKS 3, 5, & 17	G. LECKIE P. SCHMID
B	1-3-70	REVISE EFFECTIVITY	D. SCHMIDT P. SCHMID
A	1-7-69	REVISE MSFC REQUIREMENTS	J.C. PEURUNG P. SCHMID
REV.	DATE	REASON	Contractor Approval KSC Approval
S. J. C. PEURUNG		IBM - K73	9. DATE AUGUST 8, 1969
F. W. SCHMID		LV-MEC-25	12. APPROVAL DATE AUGUST 8, 1969

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE IU WATER SYSTEM GN <sub>2</sub> TEST		2. KSC TEST NUMBER V-24391	
		3. EFFECTIVITY AS-206 & SUBS	
13. LOCATION VAB	14. COMPUTER PROC. IDENTIFICATION N/A	15. CRT. TEST TIME 2 MEN - 4 HOURS	
16. SUPPORT REQUIREMENTS INTERSTAGE: N/A OFF-COMPLEX: N/A ON-COMPLEX: IBM QA IBM VEHICLE NETWORKS HP GAS IBM MECHANICAL			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION MSFC-MAN-014 V-26549 MSFC-SPEC-164 TM-011-001-24 7921601			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE INSPECTION - DEVELOPMENT ENGINEERING - SATURN V		2. KSC TEST NUMBER V-24392
		3. EFFECTIVITY 508 & Subs
4. TEST OBJECTIVES THE OBJECT OF THIS TEST IS TO VERIFY THE STRUCTURAL INTEGRITY OF THE STAGE AND INTER-STAGE, VERIFY THE ELECTRICAL INTEGRITY OF THE STAGE BY CONFIRMING CONNECTOR INTEGRITY SEALS AND PART NUMBER/SERIAL NUMBER ALLOCATIONS, VERIFY THE INTEGRITY AND CONDITION OF THE PROPULSION FLUID AND GAS LINES, AND TO DETERMINE THE NATURE AND EXTENT OF ANY DISCREPANCIES.		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. THE FOLLOWING ARE DESCRIBED IN THE PROCEDURE: 1. STRUCTURAL/MECHANICAL (A) VISUAL INSPECTION OF LH <sub>2</sub> TANK EXTERIOR. (B) VISUAL INSPECTION OF THE INTERIOR AND EXTERIOR OF THE FORWARD SKIRT, AFT SKIRT, THRUST STRUCTURE, AFT INTERSTAGE, AND STAGE PROTUBERANCES. (C) X-RAYING THE JUNCTION OF THE FORWARD SKIRT-FORWARD DOME TO DETERMINE THE PRESENCE OF DEBRIS AND ITS DAMAGE POTENTIAL. (D) X-RAYING THE JUNCTURE OF THE THRUST STRUCTURE-LO <sub>2</sub> TANK AFT DOME TO DETERMINE THE PRESENCE OF DEBRIS AND ITS DAMAGE POTENTIAL. (E) INSPECTION OF BONDED SUPPORTS IS MADE UPON RECEIPT, PRIOR TO ORDNANCE INSTALLATION AND AFTER CRYOGENIC LOADING TO VERIFY BOND INTEGRITY 2. PROPULSION (A) VISUAL INSPECTION OF ALL FLARED TUBE FITTINGS FOR TORQUE STRIPING. (B) INSPECTION OF ALL LOW PRESSURE PROPELLANT DUCTS, VENT DUCTS, AND THE J-2 ENGINE FOR DENTS AND SCRATCHES. 3. ELECTRICAL (A) VISUAL INSPECTION OF ALL STAGE CONNECTORS UPON ARRIVAL AT KSC TO VERIFY COMPLIANCE WITH QUALITY INSPECTION INTEGRITY SEALS. (B) DISCONNECTION, VERIFY AGAINST ACCEPTABLE STANDARDS, RECONNECTION, AND ADDITION OF INTEGRITY SEAL ON ALL CONNECTORS WITHOUT PROPER INTEGRITY SEALS.  (CONTINUED ON PAGE 2)		
TEST REQUIREMENTS MSFC: TR 1B76996, Para. 0.2.3.3.1.2 0.2.1.1.3.0		
C	3/18/71	Revised KSC Test No. V-24392, was O-V-24392
B	9/3/70	REVISE TEST DESCRIPTION & TEST REQUIREMENTS
A	6-10-69	UPDATE TO PROPER FORMAT AND REVISE SUPPORT REQUIREMENTS
5. REV.	DATE	REASON
7. CONTRACTOR APPROVAL /S/M. J. PLOMER		8. ORGANIZATION MDAC
9. DATE April 17, 1969		10. NASA-KSC APPROVAL /S/WILLIAM G. MAHONEY
11. ORGANIZATION LV-MEC-24		12. APPROVAL DATE 4-22-69

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE INSPECTION - DEVELOPMENT ENGINEERING - SATURN V		2. KSC TEST NUMBER V-24392
		3. EFFECTIVITY 508 & Subs
13. LOCATION VAB, LC 39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 30 Shifts
16. SUPPORT REQUIREMENTS RD 40091-1Q		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION MDAC DRAWING 1B62281 V-29053, O-V-24087, V-24079		
18. ITEM CONTINUATION 5: TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION (CONTINUED) (C) VERIFICATION OF CORRECT PART NUMBERS AND SERIAL NUMBERS OF SELECTED COMPONENTS.  THE FOLLOWING EQUIPMENT STATUS/CONFIGURATION MUST EXIST: 1. ACCESS TO FORWARD SKIRT, AFT SKIRT, AFT INTERSTAGE; EXTERNAL TANKAGE, J-2 ENGINE, AND TUNNELS.		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE IU/SIVB TCS FILL		2. KSC TEST NUMBER V-24407	
		3. EFFECTIVITY AS-206 & SUBS	
4. TEST OBJECTIVES  FILL THE IU/SIVB THERMAL CONDITIONING SYSTEM (TCS) WITH COOLANT.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. 1. THE TCS IS FILLED WITH COOLANT. 2. A LEAK CHECK IS PERFORMED ON INITIAL FILL. 3. AN AIR ENTRAPMENT IS PERFORMED TO DETERMINE THE PERCENTAGE OF ENTRAPPED GAS. 4. THE TCS ACCUMULATOR BLADDER IS POSITIONED TO ALLOW SPECIFIED RESERVE.  CONFIGURATION: VEHICLE ASSEMBLED  <u>TEST REQUIREMENTS</u>  MSFC: 7921601      TM-011-001-2H 0.3.5.2.1.1'      8.1.7.1.2' 0.3.5.2.6.1.3.1' 0.3.5.2.6.1.3.2'  PHASE: II, III, IV, V, VI			
E	8-6-4	REVISED BLOCKS 3, 5 & 17	<div style="display: flex; justify-content: space-between;"> <div><i>D. X. Riley</i></div> <div><i>P. Schmid</i></div> </div>
D	9-18-2	REVISED BLOCKS 3, 4, 5, 16 & 17	G.E. LECKIE      P. SCHMID
C	4-19-72	REVISED BLOCKS 3, 5, & 17	G.E. LECKIE      P. SCHMID
B	8-20-6	UPDATE MSFC REQUIREMENTS	G.E. LECKIE      P. SCHMID
A	6-9-70	UPDATE MSFC REQUIREMENTS REF RSCC 53	D.E. SCHMIDT      P. SCHMID
6. REV. DATE		7. CONTRACTOR APPROVAL	
		8. ORGANIZATION	
		9. DATE	
		10. NASA-KSC APPROVAL	
		11. ORGANIZATION	
		12. APPROVAL DATE	
		13. CONTRACTOR APPROVAL	
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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE IU/SIVB TCS FILL		2. KSC TEST NUMBER V-24407	
		3. EFFECTIVITY AS-206 & SUBS	
13. LOCATION VAB, LC 39A, B		14. COMPUTER PROC. IDENTIFICATION N/A	
		15. EST. TEST TIME 3 MEN - 8 HOURS	
16. SUPPORT REQUIREMENTS  INTERSTAGE:      SIVB MECHANICAL (NOT APPLICABLE TO AS-513 & AS-515)  OFF-COMPLEX:      N/A  ON-COMPLEX:      IU VEHICLE NETWORKS GROUND POWER HP GAS OIS IBM MECHANICAL IBM QA			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 20Z42200      MSFC-MAN-008      7921601 20Z42212      MSFC-MAN-036      TM-011-001-2H MSFC-MAN-014      13M50099      10Z22204			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE AIR ENTRAINMENT AND BLADDER POSITIONING		2. KSC TEST NUMBER V-24408	
4. TEST OBJECTIVES DETERMINE THE IU/SIVB THERMAL CONDITIONING SYSTEM LEAKAGE RATE AND THE PERCENTAGE OF VOIDS IN THE SYSTEM, AS COMPARED TO ALLOWABLE PERCENTAGE OF VOIDS.		3. EFFECTIVITY AS-206 & SUBS	
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. 1. INSTALL THE VOLUME CHECK TOOL (STANDPIPE) FILLED TO A KNOWN AMOUNT OF COOLANT. 2. DETERMINE THE TCS VOID SIZE. 3. FILL TCS TO PROPER LEVEL. 4. CALCULATE PERCENTAGE OF VOID AND LEAK RATE. CONFIGURATION: VEHICLE STACKED <u>TEST REQUIREMENTS</u> MSFC: 7921601 0.3.5.2.6.1.3.1 0.3.5.2.6.1.3.2 TM-011-001-2H B.1.7.1.2 ✓ PHASE: III, IV, V, VI			
D	8-6-4	REVISED BLOCKS-3, 5 & 17	<i>D.K. Pauling</i>
C	9-18-2	REVISED BLOCKS 3, 4, 5 & 17	G.E. LECKIE P. SCHMID
B	4-19-2	REVISED BLOCKS 3, 5 & 17	G.E. LECKIE P. SCHMID
A	6-9-70	UPDATE MSFC REQUIREMENTS REF RSOC 53	D.E. SCHMIDT P. SCHMID
8. REV	DATE	REASON	Contractor Approval KSC Approval
9. CONTRACTOR APPROVAL S/ D.E. SCHMIDT		10. ORGANIZATION IBM K-73	9. DATE MARCH 31, 1970
11. NASA/KSC APPROVAL S/ P.W. SCHMID		11. ORGANIZATION LV-MEC-25	12. APPROVAL DATE MARCH 31, 1970

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 1 OF 2	
1. TEST TITLE AIR ENTRAINMENT AND BLADDER POSITIONING		2. KSC TEST NUMBER V-24408	
13. LOCATION VAB, LC39A, B.		3. EFFECTIVITY AS-206 & SUBS	
14. COMPUTER PROC. IDENTIFICATION		15. EST. TEST TIME 3 MEN - 2 HOURS	
16. SUPPORT REQUIREMENTS INTERSTAGE: N/A OFF-COMPLEX: N/A ON-COMPLEX: IBM QA IU VEHICLE NETWORKS GROUND & VEHICLE POWER HP GAS OIS IBM MECHANICAL			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 7919372-1 MSFC-MAN-008 TM-011-001-2H KSC-C-123D MSFC-MAN-036 MSFC-MAN-014 7921601			
18. ITEM CONTINUATION			

KSC OPERATIONS  
APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET

PAGE 1 OF 2

TEST TITLE M/L OAT BOOM INSTALLATION, REMOVAL AND P/M	2. KSC TEST NUMBER V-24422
	3. EFFECTIVITY AS-209 & SUBS AS-514 & SUBS

1. DEFINE SUPPORT REQUIREMENTS  
2. DETAIL HANDLING INSTRUCTIONS  
3. IDENTIFY LOCATION OF EQUIPMENT BOTH IN STORAGE AND INSTALLED  
4. SPECIFY INSTALLATION AND REMOVAL TIMES  
5. DEFINE PREVENTIVE MAINTENANCE OPERATIONS FOR OAT BOOMS IN STORAGE

THIS TEST ☐ DOES ☒ DOES NOT CONTAIN HAZARDOUS OPERATIONS.

BEFORE TO VEHICLE ERECTION, OAT BOOMS WILL BE INSPECTED TO ASSURE THAT THEY ARE COMPLETE AND READY FOR INSTALLATION. A SUPPORT REQUEST WILL BE GENERATED TO TRANSPORT AND INSTALL THE "BOOMS."

AFTER VAB TESTING IS COMPLETE AND AS PART OF THE M/L PREPARATIONS FOR MOVING TO THE PAD, BOOMS WILL BE TAKEN DOWN AND RETURNED TO STORAGE AREA WITH LOOSE ITEMS PROPERLY STOWED.

OAT BOOMS IN STORAGE WILL RECEIVE PREVENTIVE MAINTENANCE.

PHASE IB, IV TEST REQUIREMENTS: N/A

B	15-74	REVISED BLOCKS 1, 3, 4, 5 AND 17	<i>[Signature]</i>	<i>[Signature]</i>
A	15-72	REVISED BLOCKS 3, 5 & 16	<i>[Signature]</i> 4/16/70	<i>[Signature]</i>

REV	DATE	REASON	Contractor Approval	KSC Approval
		8. ORGANIZATION IBM-K73	9. DATE 10-14-70	
		11. ORGANIZATION LH MC 25	12. APPROVAL DATE 10/16/70	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)

PAGE 2 OF 2

1. TEST TITLE M/L OAT BOOM INSTALLATION, REMOVAL AND P/M	2. KSC TEST NUMBER V-24422
	3. EFFECTIVITY AS-209 & SUBS AS-514 & SUBS

13. LOCATION M/L 1, 2	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 2 MEN - 4 HOURS
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16. SUPPORT REQUIREMENTS

SUPPORT CONTRACTOR  
HEAVY EQUIPMENT GROUP  
IBM MECHANICAL  
IBM INSPECTION

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

JB20141  
KSC-STD-S-0001 B

18. ITEM CONTINUATION

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
GAGE PANEL ASSEMBLY, 1B72224 VERIFICATION	V-24434	
	3. EFFECTIVITY	
	AS REQUIRED	
4. TEST OBJECTIVES		
THIS TEST PROVIDES FUNCTIONAL CHECKOUT INSTRUCTIONS FOR ALL 1B72224 UNITS AND CALIBRATION INSTRUCTIONS FOR THOSE UNITS CALIBRATED BY MDAC.		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION		
THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
TEST DESCRIPTION/EQUIPMENT STATUS		
THIS PROCEDURE SHALL BE PERFORMED AS AUTHORIZED BY THE MDAC CALIBRATION RECALL SYSTEM (REFER. SP 10.022-DF) AND SHALL PROCEED AS FOLLOWS:		
1. FUNCTIONALLY TEST PRESSURE REGULATOR.		
2. LEAK CHECK SYSTEM AT MAXIMUM OPERATING PRESSURE.		
3. TEST PRESSURE GAGE FOR ACCURACY.		
CONFIGURATION		
LABORATORY TEST		
STANDBY		
TEST REQUIREMENT		
MSFC: N/A		
6. REV. DATE REASON		
Contractor Approval KSC Approval		
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
<i>[Signature]</i>	MDAC	3-30-71
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
<i>[Signature]</i>	IV-APC-24	3-30-71

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE		2. KSC TEST NUMBER
GAGE PANEL ASSEMBLY, 1B72224 VERIFICATION		V-24434
		3. EFFECTIVITY
		AS REQUIRED
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME
PCOL	N/A	3 HOURS
16. SUPPORT REQUIREMENTS		
NONE		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		REPLACES IV-24242
LVO 220413 GAGE PANEL ASSEMBLY		
1B72224 GAGE PANEL ASSEMBLY		
1B72363 CMP GAGE PANEL ASSEMBLY DAC P/N 1B72224		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE IU TCS GN <sub>2</sub> TEST		2. REF. TEST NUMBER V-24435	
4. TEST OBJECTIVES TO VERIFY THAT IU THERMAL CONDITIONING SYSTEM IS LEAK FREE		3. EFFECTIVITY AS REQUIRED	
5. TEST DESCRIPTION, EQUIPMENT STATUS/CONFIGURATION (REPLACES IV-24235) THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. WITH IU COOLANT LOOP DISCONNECTED FROM SIVB COOLANT LOOP, THE IU COOLANT LOOP IS GRADUALLY PRESSURIZED TO 50 PSIG WITH GN <sub>2</sub> . ALL LINES, FITTINGS, AND COMPONENTS IN PRIMARY COOLANT LOOP ARE LEAK CHECKED. THE GN <sub>2</sub> IS LOCKED IN FOR ONE HOUR, AND PRESSURE IS MONITORED TO VERIFY THAT THERE ARE NO LEAKS.  THE OPEN LOOP SUPPLY AND RETURN FLEXHOSES ARE CONNECTED TOGETHER, OR THE FLIGHT U-TUBE IS INSTALLED, AND A LEAK CHECK IS PERFORMED AT 50 PSIG. THE GN <sub>2</sub> IS LOCKED IN FOR 15 MINUTES AND THE PRESSURE IS MONITORED TO VERIFY THAT THERE ARE NO LEAKS.  OPERATION OF PUMP PRESSURE SWITCH IS CHECKED BY VERIFYING SWITCH OPENING ON INCREASING PRESSURE AND CLOSING ON DECREASING PRESSURE.  CONFIGURATION: VEHICLE STACKED  PHASE: 11  TEST REQUIREMENTS MSFC: N/A			
E	3/5/74	REVISED BLOCKS 3 & 17	<i>W. K. Bailey</i>
A	4/19/74	REVISED BLOCKS 3, 13, AND 16	<i>W. K. Bailey</i>
6. REV.	DATE	REASON	Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL <i>W. K. Bailey</i>		8. ORGANIZATION IBM - K73	9. DATE 3/16/74
10. NASA KSC APPROVAL <i>W. K. Bailey</i>		11. ORGANIZATION 24-146-25	12. APPROVAL DATE 3/12/74

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE IU TCS GN <sub>2</sub> TEST		2. REF. TEST NUMBER V-24435	
13. LOCATION LC 39/VAB		14. COMPUTER PROC. IDENTIFICATION N/A	
15. SUPPORT REQUIREMENTS RD 40092, 40093 INTERSTAGE: SIVB MECHANICAL OFF-COMPLEX: NONE ON-COMPLEX: IBM QA IBM MECHANICAL		16. EST. TEST TIME 3 MEN -- 12 HOURS TOTAL	
17. OTHER APPLICABLE REFERENCE DOCUMENTATION MSFC-SPEC-164 MC-245 10222204			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE INSTALLATION, LH <sub>2</sub> TANK DOOR, DSV-4B STAGE		2. KSC TEST NUMBER V-24436
4. TEST OBJECTIVES THE OBJECT OF THIS PROCEDURE IS TO ENSURE PROPER INSTALLATION OF THE LH <sub>2</sub> TANK DOOR AND TO MAINTAIN SYSTEM CLEANLINESS.		3. EFFECTIVITY 206 & Subs
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. PROVIDES DETAILED INSTRUCTIONS FOR INSTALLATION OF LH <sub>2</sub> TANK DOOR. PROCEDURE ENSURES THAT ALL NECESSARY EQUIPMENT AND MATERIALS ARE AVAILABLE AT STAGE TO ACCOMPLISH TASK AND THAT LH <sub>2</sub> TANK DOOR IS INSTALLED IN PROPER SEQUENCE. PROCEDURE ENSURES THAT SYSTEM CLEANLINESS IS MAINTAINED. THE STAGE MAY BE IN EITHER THE VERTICAL OR HORIZONTAL POSITION.		
TEST REQUIREMENTS MSFC: N/A		
A 7-12-72 DELETED TBD IN SUPPORT REQUIREMENTS BLOCK		
6. REV. 1 DATE R. Q. English 3/24/71	8. ORGANIZATION MDAC	9. DATE 3-24-71
7. CONTRACTOR APPROVAL R. Q. English	10. NASA-KSC APPROVAL [Signature]	11. ORGANIZATION LV-MEC-24
12. APPROVAL DATE 3/24/71		

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE INSTALLATION, LH <sub>2</sub> TANK DOOR, DSV-4B STAGE		2. KSC TEST NUMBER V-24436
13. LOCATION		3. EFFECTIVITY 206 & Subs
14. COMPUTER PROC. IDENTIFICATION		15. EST. TEST TIME 4 hours
16. SUPPORT REQUIREMENTS NONE		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE Q-BALL INSTALLATION AND REMOVAL		2. KSC TEST NUMBER V-24437	
		3. EFFECTIVITY AS-206 & SUBS	
4. TEST OBJECTIVES INSTALLATION AND REMOVAL OF Q-BALL, SHIM, GROUND STRAP AND ATTACHING HARDWARE.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION <p>THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.          THIS OPERATION IS DIVIDED INTO THREE PARTS:</p> <ol style="list-style-type: none"> <li>Q-BALL PREP FOR INSTALLATION AND GROUND STRAP ATTACHMENT.</li> <li>THE SHIM AND Q-BALL ARE INSTALLED ON THE ESCAPE TOWER.</li> <li>THE SHIM AND Q-BALL ARE REMOVED FROM THE ESCAPE TOWER.</li> </ol> <p>CONFIGURATION: VEHICLE ERECTED WITH ESCAPE TOWER INSTALLED OR LES HORIZONTAL IN LES STORAGE BUILDING.</p> <p>PHASE: IV, V OR VI</p> <p><u>TEST REQUIREMENTS</u></p> <p>MSFC: 7921601          0.3.3.1.2          TM-011-001-2H          B.1.3.1</p>			
C	8-6-74	REVISED BLOCKS 3, 4, 5 AND 17	<i>[Signature]</i>
B	4-19-72	REVISED BLOCKS 3, 5 AND 17	G.E. LECKIE
A	12-20-71	REVISE BLOCKS 3, 5 AND 15	P. SCHMID
6. REV.	DATE	REASON	Contractor Approval KSC Approval
S/S.E. LECKIE		IBM - K73	APRIL 14, 1971
S/PAUL W. SCHMID		LV-MEC-25	APRIL 14, 1971

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE Q-BALL INSTALLATION AND REMOVAL		2. KSC TEST NUMBER V-24437	
		3. EFFECTIVITY AS-206 & SUBS	
13. LOCATION VAB-LC 39A, B, C	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 3 MEN - 16 HOURS	
16. SUPPORT REQUIREMENTS RD-40092-3AQ INTERSTAGE: NAR OFF-COMPLEX: NONE ON-COMPLEX: IBM QA IBM MECHANICAL KSC SAFETY IBM STABILIZER			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION TM-011-001-2H 60C18209 60C18259 10Z12253-17 60C18210 60C18260 7921601 60C18211 60C18261			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
TEST TITLE S-IVB STAGE UNLOADING, POINT BARROW		2. KSC TEST NUMBER V-24442
		3. EFFECTIVITY AS REQUIRED
TEST OBJECTIVES  To unload an S-IVB stage and attendant equipment from the Point Barrow at Port Canaveral, transfer to NASA barge, unload S-IVB from NASA barge at VAB dock and move S-IVB into VAB.		
TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  1. Preliminary preparations at Port Canaveral 2. Transfer of S-IVB and attendant equipment from Point Barrow to NASA barge. 3. Unload NASA barge and transport S-IVB and attendant equipment to VAB low bay area.  <u>Equipment Status/Configuration</u> 1. A clear area for mooring Point Barrow and NASA barge at Port Canaveral. 2. A clear area for mooring NASA barge at VAB dock. 3. A clear area on VAB dock for washing stage covers with fresh water. 4. Clear area in VAB low bay transfer aisle for S-IVB stage/transporter.  <u>TEST REQUIREMENTS</u> MSFC N/A		
1. REV.	DATE	REASON
A	7-11-72	Added RD for Saturn IB; Changed Effectivity to "As Required"
7. CONTRACTOR APPROVAL <i>[Signature]</i> 4/20/71		8. ORGANIZATION MDAC
9. NASA-KSC APPROVAL <i>[Signature]</i>		10. ORGANIZATION LC-NCC-24
9. DATE 4/20/71		12. APPROVAL DATE 4/20/71

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
TEST TITLE S-IVB STAGE UNLOADING, POINT BARROW		2. KSC TEST NUMBER V-24442
		3. EFFECTIVITY AS REQUIRED
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME 16 hours
16. SUPPORT REQUIREMENTS  RD 40090 - 2AA SID-24442-D		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  MDAC Dwg 1B38090, 1B38091, O-I-24118-S-IVB This TCS supersedes IV-24248		
18. ITEM CONTINUATION		

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REV 32

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE PREPARATION OF IU PRIOR TO HYPERGOLIC LOADING		2. KSC TEST NUMBER V-24443	
4. TEST OBJECTIVES TO INSTALL AND REMOVE THE IU HYPERGOLIC SPILL PROTECTIVE CURTAIN AND TO SEAL THE IU PRIOR TO HYPERGOLIC LOADING.		3. EFFECTIVITY AS-206 & SUBS	
5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION <p>THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.            THIS PROCEDURE PROVIDES FOR THE INSTALLATION AND REMOVAL OF:</p> <ol style="list-style-type: none"> <li>1. IU HYPERGOLIC SPILL PROTECTIVE CABLE TRAY COVERS, CURTAINS &amp; TUNNEL</li> <li>2. GAPS, JOINTS, FASTENERS, OPENINGS, ETC. SEALING WITH COMPATIBLE TAPE.</li> </ol> <p>CONFIGURATION: VEHICLE STACKED            PHASE: III, IV, V, VI</p> <p><u>TEST REQUIREMENTS</u>            MSFC: TM-011-001-2H            8.6.0.1 /</p>			
B	8-6-74	REVISED BLOCKS 3, 5 AND 17	<i>W. R. B. B. B.</i>
A	4-19-72	REVISED BLOCKS 3, 5, 16 AND 17	G.E. LECKIE P.W. SCHMID
6. REV.	DATE	REASON	Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL G.E. LECKIE		8. ORGANIZATION IBM - K73	9. DATE APRIL 28, 1971
10. KSC APPROVAL PAUL W. SCHMID		11. ORGANIZATION LV-MEC-25	12. APPROVAL DATE APRIL 29, 1971

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE PREPARATION OF IU PRIOR TO HYPERGOLIC LOADING		2. KSC TEST NUMBER V-24443	
13. LOCATION LC-39A, B, C		14. COMPUTER PROC. IDENTIFICATION N/A	
15. SUPPORT REQUIREMENTS INTERSTAGE: N/A OFF-COMPLEX: N/A ON-COMPLEX: IBM QA IBM MECHANICAL IBM VEHICLE NETWORKS		3. EFFECTIVITY AS-206 & SUBS	
17. OTHER APPLICABLE REFERENCE DOCUMENTATION V-26549 7916195 7915900-1		18. EST. TEST TIME 4 MEN - 8 HOURS EACH	
18. ITEM CONTINUATION			



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE STAGE LOADING, DSV-4B, AIR CARRIER - KSC		2. KSC TEST NUMBER V-24444
		3. EFFECTIVITY As Required
4. TEST OBJECTIVES  THIS PROCEDURE DESCRIBES THE STEPS REQUIRED TO TRANSFER THE S-IVB STAGE FROM MODEL DSV-4B-300 TRANSPORTER TO CLT AND SUBSEQUENT LOADING INTO THE SUPER GUPPY.		
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THE FOLLOWING OPERATIONS ARE INCLUDING IN THIS DRAWING: 1. PRELIMINARY OPERATIONS (ALIGNMENT OF TRANSPORTER TO CLT) 2. STAGE TRANSFER FROM TRANSPORTER TO CLT 3. PREPARATION OF SUPER GUPPY TO RECEIVE STAGE 4. ALIGNMENT OF CLT TO SUPER GUPPY 5. TRANSFER OF STAGE FROM CLT TO SUPER GUPPY 6. INSTALLATION OF SUPER GUPPY TIE-DOWNS TO STAGE 7. STAGE SECURITY CHECK  THE FOLLOWING EQUIPMENT STATUS MUST BE IN EFFECT: 1. VERIFICATION OF CLT PROOF-LOAD TO DAC REQUIREMENTS 2. SUPER GUPPY PROPERLY POSITIONED AT SKID STRIP TO DAC REQUIREMENTS  NOTE: THIS PROCEDURE IS NOT SCHEDULED OR PLANNED AND WILL BE RELEASED ON AN "AS REQUIRED" BASIS.  CONFIGURATION: SUPER GUPPY LANDED AT SKID STRIP AND STAGE IN CONFIGURATION TO BE LOADED.  <div style="display: flex; justify-content: space-between;"> <div>STANDBY</div> <div>TEST REQUIREMENTS MSFC: N/A</div> </div>		
A 6-14-72 Added RD for Saturn IB		
6. REV. DATE	REASON	Contractor Approval
7. CONTRACTOR APPROVAL <i>P. J. Kopy</i>	8. ORGANIZATION McDonnell Douglas	9. DATE 5-4-71
10. NASA KSC APPROVAL <i>H. J. Mahoney</i>	11. ORGANIZATION LV-MEC-24	12. APPROVAL DATE 5/4/71

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE STAGE LOADING, DSV-4B, AIR CARRIER - KSC		2. KSC TEST NUMBER V-24444
		3. EFFECTIVITY As Required
13. LOCATION SKID STRIP	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 20 hours
16. SUPPORT REQUIREMENTS  RD 40090-2M RD 21440		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  DAC DWG 1B62328 THIS TCS SUPERSEDES O-IV-24223.		
18. ITEM CONTINUATION		

KSC OPERATIONS  
APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET

PAGE 1 OF 2

1. TEST TITLE	2. KSC TEST NUMBER
IU WATER ACCUMULATOR FILL	V-24445
3. EFFECTIVITY	AS-206 & SUBS

4. TEST OBJECTIVES

TO FILL IU WATER ACCUMULATOR

5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION

THIS TEST ☐ DOES ☒ DOES NOT CONTAIN HAZARDOUS OPERATIONS.

THIS TEST DESCRIBES TWO METHODS FOR FILLING WATER ACCUMULATOR.

METHOD I: THE WATER ACCUMULATOR IS FILLED USING WATER ACCUMULATOR SERVICING ASSEMBLY CART. THE CART SUPPLY RESERVOIR IS FILLED WITH DEMINERALIZED WATER WHICH IS THEN TRANSFERRED TO IU WATER ACCUMULATOR.

METHOD II: THE WATER IS TRANSFERRED FROM PLASTIC CONTAINERS TO IU WATER ACCUMULATOR. TCS & GBS GN<sub>2</sub> SYSTEMS ARE LEAK TESTED AT PREFLIGHT CHECKOUT PRESSURE FOLLOWING ACCUMULATOR FILL.

IN BOTH METHODS, THE QUANTITY OF WATER TRANSFERRED TO ACCUMULATOR IS MEASURED TO VERIFY 144 POUNDS MINIMUM IS IN ACCUMULATOR.

CONFIGURATION: VEHICLE STACKED

PHASE: VI

TEST REQUIREMENTS

MSFC: 7921601  
 0.3.5.2.6.2.1.1  
 0.3.5.2.6.2.1.2  
 0.3.5.2.6.2.1.3  
 0.3.5.2.6.2.2  
 0.3.5.2.1.3  
 0.3.5.2.6.2.1  
 TM-011-001-2H  
 B.4.0.1

B	2-6-74	REVISED BLOCKS 3, 5 AND 17	<i>S. G. E. Leckie</i>	<i>P. Schmid</i>
A	1-19-72	REVISED BLOCKS 3, 5, 16 AND 17	G.E. LECKIE	P. SCHMID

6. REV	DATE	REASON	Contractor Approval	KSC Approval
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE		
S/G.E. LECKIE	IBM - K73	MAY 7, 1971		
10. NASA KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE		
S/PAUL W. SCHMID	LY-MEC-25	MAY 5, 1971		

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)

PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NUMBER
IU WATER ACCUMULATOR FILL	V-24445
3. EFFECTIVITY	AS-206 & SUBS

13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME
LC-39A, B, C	N/A	2 MEN - 4 HOURS EACH

16. SUPPORT REQUIREMENTS

INTERSTAGE: N/A

OFF-COMPLEX: N/A

ON-COMPLEX: IBM QA  
 IBM MECHANICAL  
 IBM VEHICLE NETWORKS

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

MSFC-MAN-038	20242212
MSFC-SPEC-164	7921601
MS33540	TM-011-001-2H

18. ITEM CONTINUATION

KSC OPERATIONS APOLLO-SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE INSPECTION AND CORROSION CONTROL OF S-1B STAGE		2. KSC TEST NUMBER V-24497	
		3. EFFECTIVITY 206 & SUBS	
4. TEST OBJECTIVES TO INSPECT S-1B STAGE FOR CORROSION			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. THIS PROCEDURE COVERS THE PERIODIC GENERAL CORROSION AND STRESS CORROSION CRACK INSPECTIONS OF THE S-1B VEHICLE. PART I - INITIAL AND QUARTERLY CRACK INSPECTIONS OF MAJOR STRUCTURAL PARTS PART II - MONTHLY CRACK INSPECTIONS OF CRITICAL STRUCTURAL PARTS PART III - FORTNIGHTLY CRACK INSPECTION OF CRITICAL STRUCTURAL PARTS. PART IV - 48 HOUR CRACK INSPECTION OF CRITICAL STRUCTURAL PARTS WITH HIGH SUSTAINED STRESS. PART V - H-1 ENGINE CORROSION INSPECTION PART VI - INITIAL AND QUARTERLY GENERAL CORROSION INSPECTION PART VII - MONTHLY GENERAL CORROSION INSPECTION PART VIII - ITEMS FOUND TO HAVE CORROSION SHALL BE CLEANED AND RE-PAIRED BY AN ACCEPTABLE METHOD OR REPLACED BY ACCEPTABLE SPARES. PHASE N/A TEST REQUIREMENTS SEE ITEM 18			
D	9/13/74	TEST REQUIREMENT CHANGES	<i>[Signature]</i>
C	5/7/74	TO ADD DOCUMENTATION REQUIREMENTS	J.W. Rathjen R. Newall
E	12/5/72	CHANGE TITLE AND EFFECTIVITY	K. Yamasaki R. Newall
A	9/13/72	ADD TEST REQUIREMENT 3.4.0.1.7	K. Yamasaki R. Newall
6. REV. DATE		REASON	
7. CONTRACTOR APPROVAL R. W. Eddy		8. ORGANIZATION CCSD	
9. DATE 12/14/71		10. NASA-KSC APPROVAL R. Newall	
11. ORGANIZATION LV-MEC-23		12. APPROVAL DATE 12/15/71	

KSC FORM 22-730 (7/67)

APOLLO-SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE INSPECTION AND CORROSION CONTROL OF S-1B STAGE		2. KSC TEST NUMBER V-24497	
		3. EFFECTIVITY 206 & SUBS	
13. LOCATION VAB OR PAD	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 24 HOURS	
16. SUPPORT REQUIREMENTS 1) AIRBORNE NETWORKS 2) AIRBORNE MEASURING			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION DRAWING 60C06033, 60C16037 TEST AND CHECKOUT REQUIREMENTS, SPECIFICATIONS AND CRITERIA FOR USE AT KSC. 60C06050			
18. ITEM CONTINUATION TEST REQUIREMENTS: 3.4.0.1.1 3.4.0.1.2 3.4.0.1.3 3.4.0.1.5 3.4.0.1.6 3.4.0.1.7 3.3.5.24.1 THRU 3.3.5.24.8			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE REMOVAL OF ENVIRONMENTAL PROTECTION EQUIPMENT	2. KSC TEST NUMBER V-24498	
		3. EFFECTIVITY 206 AND SUBS
4. TEST OBJECTIVES REMOVAL ENVIRONMENTAL PROTECTION AND PREPARE STAGE FOR PRELAUNCH CHECKOUT.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. THE FOLLOWING VEHICLE ACCESS POINTS WILL BE OPENED: A. CANISTERS 12 AND 13. B. SEAL PLATES AS REQUIRED. C. FUEL TANKS 3 AND 4 COVERS FORWARD SECTION. D. FUEL AND LOX BAY DOORS AFT SECTION. E. HEAT SHIELD PANELS AS REQUIRED. F. CENTER BARREL.  HARD BELLOWS COVERS WILL BE REMOVED AND REPLACED WITH SOFT COVERS. FELT COVERS ARE TO BE PLACED ON ALL FORWARD FUEL AND LOX TANK BULKHEADS. LOX AND FUEL TANK BREATHERS ARE TO BE CHANGED AS THE MOISTURE MONITORS INDICATE A SATURATED CONDITION. WORK LIGHTS WILL BE INSTALLED AS REQUIRED. THE FUEL TANK LATERAL RESTRAINING HARDWARE IS REMOVED.  SPECIAL TEST EQUIPMENT REQUIRED INCLUDES: A. SOFT BELLOWS COVERS. B. TANK BULKHEAD FELT COVERS. C. DRY LOX AND FUEL TANK BREATHER ASSEMBLIES. D. SOFT ZIPPER DOORS. E. WORK LIGHTS.  CONFIGURATION - VERTICAL POSITION  TEST REQUIREMENTS: 1) 3.4.0.1.8  PHASE 1A & II		
A. REQUIREMENT IS PROVIDED BY PREPS FOR CDDT AND LAUNCH V-24522		
6. CONTRACTOR APPROVAL <i>L. L. ...</i>	8. ORGANIZATION CCSD	9. DATE 14 DEC. 1971
10. NASA/KSC APPROVAL <i>R. ...</i>	11. ORGANIZATION LV MEC 23	12. APPROVAL DATE 12/14/71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE REMOVAL OF ENVIRONMENTAL PROTECTION EQUIPMENT	2. KSC TEST NUMBER V-24498	
		3. EFFECTIVITY 206 AND SUBS
13. LOCATION VAB AND PAD	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 32 HOURS
16. SUPPORT REQUIREMENTS NONE		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 60C11001 60C21319 60C11018 CHECK LIST NONFLIGHT REMOVABLE ITEMS 60C21318		
18. ITEM CONTINUATION		



KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2																				
TEST TITLE S-IB STAGE GN2 CONTROL PRESSURE SYSTEM AND CALORIMETER PURGE SYSTEM FUNCTIONAL AND LEAKAGE TEST.		TEST NUMBER V-24499																				
TEST OBJECTIVES 1) PERFORM FUNCTIONAL CHECK OF 750 PSI REGULATOR, RELIEF VALVE, AND SYSTEM SOLENOID VALVES. 2) PERFORM LEAK CHECK OF ALL CONTROL LINES, CONNECTIONS, AND COMPONENTS IN THE GN2 CONTROL SYSTEM AND CALORIMETER PURGE SYSTEM.		EFFECTIVITY 206 AND SUBS																				
TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THE GN2 CONTROL SPHERE IS PRESSURIZED TO 100 PSIG AND THE FILL AND VENT VALVE IS CYCLED RAPIDLY TO VERIFY OPERATION OF THE VENT. THE CONTROL SPHERE IS THEN PRESSURIZED TO 2000 PSIG IN 500 PSIG INCREMENTS. THE SPHERE AND ALL ASSOCIATED LINES AND CONNECTIONS ARE LEAKCHECKED FOR EXTERNAL LEAKAGE. THE SEAT LEAKAGE OF THE SUPPLY SOLENOID AND OF THE FILL AND VENT VALVE ARE CHECKED. THE CONTROL PRESSURE REGULATOR IS INCREASED TO 750 PSIG AND FUNCTIONALLY CHECKED. THE 750 PSIG MANIFOLD AND ASSOCIATED CONTROL LINES ARE LEAKCHECKED. A LEAKCHECK OF ALL PREVALVE CONTROL PISTONS LEAKAGE AND PREVALVE CONTROL VALVE SEAT LEAKAGE IS PERFORMED WITH VEHICLE AND GROUND 750 PSIG. THE CALORIMETER PURGE CONTROL VALVE SEAT AND ALL CALORIMETER PURGE SYSTEM LINES AND CONNECTIONS ARE LEAKCHECKED. THE 750 PSIG RELIEF VALVE CRACKING PRESSURE AND RESEAT PRESSURE IS CHECKED.  VEHICLE CONFIGURATION - VERTICAL POSITION  THE TEST SHALL BE PERFORMED WITH VEHICLE AND GROUND POWER APPLIED AND ALL VALVES IN FLIGHT CONFIGURATION.  SEE TEST REQUIREMENTS ON OTHER SIDE.																						
<table border="1"> <tr> <td>E</td> <td>6/7/74</td> <td>To add prevalue timing requirement.</td> <td><i>[Signature]</i></td> </tr> <tr> <td>D</td> <td>8/7/73</td> <td>TO REFLECT CHANGE IN MSFC TEST REQUIREMENTS 3.3.6.2.3.3 THRU 3.3.6.2.3.5</td> <td><i>[Signature]</i></td> </tr> <tr> <td>C</td> <td>1/23/73</td> <td>TO REFLECT COMPLETE MSFC TEST REQUIREMENT 3.3.6.2.2.1.1 THROUGH 3.3.6.2.2.1.2</td> <td><i>[Signature]</i></td> </tr> <tr> <td>B</td> <td>9/22/72</td> <td>DELETE PARAGRAPH 3.3.5.10.3</td> <td>/s/ J. Hoffman /s/ R. Newall</td> </tr> <tr> <td>A</td> <td>7/28/72</td> <td>DELETE PARAGRAPH 4.3.5.1.1.3</td> <td>/s/ J. Hoffman /s/ R. Newall</td> </tr> </table>			E	6/7/74	To add prevalue timing requirement.	<i>[Signature]</i>	D	8/7/73	TO REFLECT CHANGE IN MSFC TEST REQUIREMENTS 3.3.6.2.3.3 THRU 3.3.6.2.3.5	<i>[Signature]</i>	C	1/23/73	TO REFLECT COMPLETE MSFC TEST REQUIREMENT 3.3.6.2.2.1.1 THROUGH 3.3.6.2.2.1.2	<i>[Signature]</i>	B	9/22/72	DELETE PARAGRAPH 3.3.5.10.3	/s/ J. Hoffman /s/ R. Newall	A	7/28/72	DELETE PARAGRAPH 4.3.5.1.1.3	/s/ J. Hoffman /s/ R. Newall
E	6/7/74	To add prevalue timing requirement.	<i>[Signature]</i>																			
D	8/7/73	TO REFLECT CHANGE IN MSFC TEST REQUIREMENTS 3.3.6.2.3.3 THRU 3.3.6.2.3.5	<i>[Signature]</i>																			
C	1/23/73	TO REFLECT COMPLETE MSFC TEST REQUIREMENT 3.3.6.2.2.1.1 THROUGH 3.3.6.2.2.1.2	<i>[Signature]</i>																			
B	9/22/72	DELETE PARAGRAPH 3.3.5.10.3	/s/ J. Hoffman /s/ R. Newall																			
A	7/28/72	DELETE PARAGRAPH 4.3.5.1.1.3	/s/ J. Hoffman /s/ R. Newall																			
6. REV DATE		REASON	9. DATE																			
7. CONTRACTOR APPROVAL		8. ORGANIZATION	10. APPROVAL DATE																			
/s/ R. W. Eddy		CCSD	9/22/71																			
10. NASA-KSC APPROVAL		11. ORGANIZATION	12. APPROVAL DATE																			
/s/ R. Newall		LV MEC 23	10/28/71																			

KSC FORM 22-328 (7/67)

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2																		
TEST TITLE GN2 CONTROL SYSTEM AND CALORIMETER PURGE SYSTEM FUNCTIONAL AND LEAKAGE TEST		TEST NUMBER V-24499																		
LOCATION VAB		COMPUTER PROC IDENTIFICATION N/A																		
SUPPORT REQUIREMENTS 1) GROUND POWER 2) S-IB STAGE POWER 3) DDAS 4) HIGH PRESSURE GAS 5) GSE MECHANICAL		EST. TEST TIME 8 HOURS																		
OTHER APPLICABLE REFERENCE DOCUMENTATION  TEST AND CHECKOUT REQUIREMENTS, SPECIFICATIONS AND CRITERIA FOR USE AT KSC. 60C06050																				
ITEM CONTINUATION (FROM BLOCK 5) MSFC PRELAUNCH TEST AND CHECKOUT REQUIREMENTS SATISFIED ARE:																				
<table> <tr> <td>1) 3.3.6.1.1</td> <td>7) 3.3.6.2.4</td> </tr> <tr> <td>2) 3.3.6.2.1</td> <td>8) 3.3.6.2.5.1</td> </tr> <tr> <td>3) 3.3.6.2.2.1 (ALL)</td> <td>9) 3.3.6.2.5.2</td> </tr> <tr> <td>4) 3.3.6.2.2.2</td> <td>10) 3.3.6.2.6</td> </tr> <tr> <td>5) 3.3.6.2.3.1 (ALL)</td> <td>11) 3.3.5.21.3</td> </tr> <tr> <td>6) 3.3.6.2.3.2</td> <td>12) 3.3.3.1.2.1</td> </tr> <tr> <td></td> <td>13) 3.3.3.1.2.2</td> </tr> <tr> <td></td> <td>14) 3.3.3.1.2.3</td> </tr> <tr> <td></td> <td>15) 3.3.4.1.2</td> </tr> </table>			1) 3.3.6.1.1	7) 3.3.6.2.4	2) 3.3.6.2.1	8) 3.3.6.2.5.1	3) 3.3.6.2.2.1 (ALL)	9) 3.3.6.2.5.2	4) 3.3.6.2.2.2	10) 3.3.6.2.6	5) 3.3.6.2.3.1 (ALL)	11) 3.3.5.21.3	6) 3.3.6.2.3.2	12) 3.3.3.1.2.1		13) 3.3.3.1.2.2		14) 3.3.3.1.2.3		15) 3.3.4.1.2
1) 3.3.6.1.1	7) 3.3.6.2.4																			
2) 3.3.6.2.1	8) 3.3.6.2.5.1																			
3) 3.3.6.2.2.1 (ALL)	9) 3.3.6.2.5.2																			
4) 3.3.6.2.2.2	10) 3.3.6.2.6																			
5) 3.3.6.2.3.1 (ALL)	11) 3.3.5.21.3																			
6) 3.3.6.2.3.2	12) 3.3.3.1.2.1																			
	13) 3.3.3.1.2.2																			
	14) 3.3.3.1.2.3																			
	15) 3.3.4.1.2																			

KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
S-IB STAGE PREPARATION FOR COUNTDOWN DEMONSTRATION & LAUNCH		V-24522 206 AND SUBS	
<p>TEST OBJECTIVES</p> <p>PREPARE THE S-IB STAGE FOR CDDT AND LAUNCH</p>			
<p>TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION</p> <p>THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>THIS PROCEDURE IS USED TO SUPPORT THE VEHICLE MECHANICAL OPERATIONS PERTINENT TO WET CDDT, DRY CDDT AND THE LAUNCH COUNTDOWN.</p> <p>PART I CONTAINS OPERATIONS TO SUPPORT WET CDDT AND LAUNCH COUNTDOWN. MOST OF PART I IS ONE TIME ONLY.</p> <p>PART II CONTAINS OPERATIONS TO SUPPORT WET CDDT. PART II CLOSES OUT ONLY THOSE ITEMS REQUIRED TO FOR WET CDDT.</p> <p>PART III CONTAINS OPERATIONS TO RECONFIGURE IN PREPARATION FOR LAUNCH COUNTDOWN.</p> <p>PART IV CONTAINS OPERATIONS TO SUPPORT THE LAUNCH COUNTDOWN. PART IV CONTAINS THE FINAL CLOSE OUT OF THE VEHICLE FOR LAUNCH.</p> <p>THIS PROCEDURE WILL BE ACCOMPLISHED FOR CDDT AND LAUNCH.</p> <p>CONFIGURATION - VEHICLE IN FLIGHT CONFIGURATION.</p> <p>MSFC REQUIREMENTS:</p> <p>3.3.5.13 3.3.1.3 3.3.3.1.3 3.4.0.1.4 3.3.3.0.1 (ALL)</p>			
7/25/74 ADDITION OF MSFC REQUIREMENT 3.3.3.0		R. Pugh	
5/11/73 CORPSE V-24522 & V-24524		R. Pugh	
2/27/73 ADDITION OF MSFC 3.3.5.13 IN REQUIREMENTS		R. Fischer R. Newall	
11/2/72 DELETION OF REFERENCES TO SECTION 4.0		R. Eddy R. Newall	
11/15/72 ADDITION OF (LV) T&CPSRC REQUIREMENTS		R. Eddy J. Humphrey	
2/28/72 NON-HAZARDOUS REP KMI.1710.13A/SF		R. Pugh R. Newall	
REV	DATE	REASON	DATE
CONTRACTOR APPROVAL		ORGANIZATION	DATE
R. Pugh		CCSD	9/22/71
NASA REC APPROVAL		ORGANIZATION	DATE
R. NEWALL		LV-MEC-23	11/12/71

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET 2)		PAGE 2 OF 2	
TEST TITLE		V-24522	
S-IB STAGE PREPARATION FOR COUNTDOWN DEMONSTRATION & LAUNCH		206 & SUBS	
LOCATION	COMPUTER CODE IDENTIFICATION	4 HOURS	
PAD	N/A		
<p>15 SUPPORT REQUIREMENTS</p> <p>H.P. GAS GSE MECHANICAL CHEMICAL ANALYSIS LABORATORY S-IB GROUND AND STAGE POWER PAD SAFETY SECURITY POLICE FIRE FIGHTING BACK-UP BATTERIES MEASURING FACILITY COMM. (OIS) RCA-110A COMPUTERS (OIS) RECORDING</p>			
<p>17 OTHER APPLICABLE REFERENCE DOCUMENTATION</p> <p>STAGE TEST AND CHECKOUT REQUIREMENTS, SPECIFICATIONS AND CRITERIA FOR USE AT KSC. 60C06050</p>			
<p>18 ITEM CONTINUATION</p>			

1. TEST TITLE PRELAUNCH ELECTRO-MECHANICAL TEST		2. KSC TEST NUMBER V-24523	
3. EFFECTIVITY 206 AND SUBS			
4. TEST OBJECTIVES  VERIFY ALL VEHICLE AND RELATED GROUND ELECTRO-MECHANICAL COMPONENTS ARE FUNCTIONING WITH THE EXCEPTION OF THE FUEL VENTS AND FUEL FILL AND DRAIN VALVE.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  S-1B STAGE GN2 - CONTROL SYSTEM FUNCTIONAL AND LEAKAGE TEST MUST BE PERFORMED PRIOR TO THIS TEST.  PREPARE S-1B VEHICLE AND GROUND SUPPORT TO PERFORM THIS TEST.  ALL VEHICLE AND RELATED GROUND COMPONENTS ARE VERIFIED TO BE IN FLIGHT CONFIGURATION. THE FOLLOWING ITEMS ARE CHECKED FOR OPERATION:  (A) CONTROL SPHERES PRESSURIZING AND VENT VALVES (B) FUEL SPHERES PRESSURIZING VALVE (C) FUEL BUBBLING VALVE (D) ENGINE PURGES (G.G. LOX INJ. LOX SYSTEM AND T. C. FUEL INJ.) (E) CALORIMETER PURGE VALVE (F) FUEL PRESSURIZING VALVES, FUEL VENT CONTROL VALVE (G) LOX VENT VALVES (H) LOX RELIEF VALVE (I) LOX FILL AND DRAIN VALVE (J) LOX BUBBLING VALVE (K) LOX PRESSURIZING VALVE (L) LOX ORIFICE BYPASS VALVES (M) PREVALVES  SECURE S-1B VEHICLE AND GROUND SUPPORT COMPONENTS.  A PREREQUISITE TO THIS PROCEDURE IS THAT ALL COMPONENTS CHECKED MUST HAVE BEEN PREVIOUSLY CHECKED PER THEIR INDIVIDUAL CHECKOUT PROCEDURES.  THIS TEST IS PERFORMED AFTER VEHICLE ERECTION.			
6. REV. DATE		7. REASON	
B 11/6/72 TITLE CHANGE		C 11/6/72	
A 2/22/72 NON-HAZARDOUS PER KMI.1710.13A/SF		K 11/6/72	
8. CONTRACTOR APPROVAL		9. DATE	
K 11/6/72		9/22/71	
10. NASA-KSC APPROVAL		11. ORGANIZATION	
K 11/6/72		LV MFC 23	
		12. APPROVAL DATE	
		10/2-8/71	

1. TEST TITLE L-I DAY ELECTRO-MECHANICAL TEST		2. KSC TEST NUMBER V-24523
		3. EFFECTIVITY 206 AND SUBS
13. LOCATION PAD	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 45 MINUTES
16. SUPPORT REQUIREMENTS		
1) S-1B VEHICLE POWER IS REQUIRED THROUGH THIS TEST. 2) S-1B MEASURING 3) GSE MECHANICAL 4) DEE-6 OPERATION IS REQUIRED 5) LOX CONTROL PANEL OPERATOR TO OPERATE THE LOX FILL AND DRAIN VALVE IF POWER IS APPLIED TO THE PROPELLANT LOADING RACKS. 6) BACK-UP BATTERIES 7) RCA-110A COMPUTERS 8) H. P. GAS		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		
<u>PHASE VI</u>		<u>TEST REQUIREMENTS: MSFC - N/A</u>

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
FM COMPONENTS PRESSURIZATION	V-24526	
3. EFFECTIVITY	206 AND SUBS	
4. TEST PURPOSES		
VERIFY/ACCOMPLISH COMPONENTS PRESSURIZED FOR PRE-LAUNCH TESTS AND FLIGHT		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION		
THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
THE PROCEDURE CONSISTS OF TWO PARTS. THE FIRST PART CHECKS COMPONENT PRESSURE AND THE OTHER PART PRESSURIZES THOSE COMPONENTS AS REQUIRED. "USE OR VOID" BLANKS ARE PROVIDED FOR INDICATING THOSE PORTIONS OF THE PROCEDURE WHICH WILL BE REQUIRED FOR EACH PERFORMANCE.		
PART I		
COMPONENT PRESSURES ARE CHECKED USING A CALIBRATED TIRE PRESSURE GAGE AND RECORDED ON A DATA SHEET.		
PART II		
THE COMPONENTS ARE PRESSURIZED AS REQUIRED, BY CONNECTING A REGULATOR PANEL TO THE COMPONENT SCHRADER VALVE. THE TEST SET-UP IS LEAK CHECKED AND THEN A 10-MINUTE PRESSURE DECAY TEST IS RUN ON THE PRESSURIZED COMPONENT. NO PRESSURE DROP IS ALLOWED. COMPONENTS CAN BE PRESSURIZED WHEN MOUNTED IN VEHICLE OR AS AN INDIVIDUAL COMPONENT.		
COMPONENT PRESSURE LIMITS ARE AS FOLLOWS:		
CONTAINER ASSEMBLIES: FM/RF ASSEMBLY PCM/RF ASSEMBLY		
PRESSURIZATION LIMITS - $6.5 \pm 0.5$ PSIG		
TEST REQUIREMENTS: MSFC: 3.2.1.5.3 3.2.2.8.3		
VEHICLE CONFIGURATION N/A		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL		8. ORGANIZATION
9. DATE		10. APPROVAL DATE
11. ORGANIZATION		12. APPROVAL DATE

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
FM COMPONENT PRESSURIZATION	V-24526	
3. EFFECTIVITY	206 AND SUBS	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME
VAB	N/A	1 HOUR/ITEM
16. SUPPORT REQUIREMENTS		
H. P. GAS		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
TEST AND CHECKOUT REQUIREMENTS, SPECIFICATIONS AND CRITERIA FOR USE AT KSC. 60C06050		
COMPONENTS PRESSURIZED BY THIS PROCEDURE AND PRESSURE SPECIFICATIONS.		
18. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
TEST TITLE HYDRAULIC SYSTEM PURGE AND FILL (STAND BY)		2. MSC TEST NUMBER V-24527
		3. EFFECTIVITY AS REQUIRED
4. TEST PURPOSES <p>ELAN (FILTER) THE HYDRAULIC FLUID IN THE ENGINE HYDRAULIC SYSTEM AND FILL THE FLUID RESERVOIR TO THE PROPER LEVEL FOR FLIGHT, IF REQUIRED.</p>		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION <p>THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>VERIFY THAT THE HYDRAULIC GROUND SERVICER HAS BEEN PREPARED FOR USE AND NOTIFY FLIGHT CONTROL UNIT FOR SUPPORT. POSITION AND SECURE BOTH ACTUATORS FOR FREE MOVEMENT TO FULL STROKE. UNCAP THE LOW PRESSURE RELIEF VALVE AND ROUTE OVERBOARD. CONNECT THE HYDRAULIC GROUND SERVICER LOW AND HIGH PRESSURE SYSTEM LINES TO THE ENGINE HYDRAULIC PACKAGE. PRECHARGE THE ENGINE HYDRAULIC ACCUMULATOR WITH GN2 TO 1600+25 PSIG.</p> <p>THE SYSTEM IS LEAKCHECKED TO VERIFY THAT NO EXTERNAL LEAKAGE EXISTS. THE PRECHARGE IS THEN REDUCED TO 300 PSIG (SO THAT THE GROUND SERVICER PUMP MAY SUPPLY FLUID TO THE ENGINE SYSTEM MORE EASILY) AND THE SYSTEM IS PURGED (CIRCULATED THRU THE FLIGHT AND GROUND FILTERS). GAS IS BLED FROM THE ENGINE FLUID SYSTEM. FLUID SAMPLES ARE TAKEN FROM THE GROUND SERVICER AND ENGINE PACKAGE TO ENSURE THE FLUID MEETS CLEANLINESS LEVELS WHICH ARE ACCEPTABLE FOR FLIGHT. THE PRECHARGE IS THEN RAISED TO 1600+25 PSIG AND THE ENGINE FLUID RESERVOIR IS FILLED TO THE PROPER LEVEL AND THE GROUND SERVICER IS DISCONNECTED FROM THE ENGINE PACKAGE.</p> <p>NOTIFY SUPPORT GROUPS TO SECURE, REDUCE THE PRECHARGE TO 10-15 PSIG.</p> <p>THIS TEST IS PERFORMED AFTER VEHICLE ERECTION.</p> <p>ENGINE HYDRAULIC PACKAGE IS SECURED FOR FLIGHT IN LAUNCH COUNTDOWN.</p> <p>PHASE N/A</p>		
TEST REQUIREMENTS MSFC: 1) 3.1.1.1.1.1 2) 3.1.1.1.1.2		
6. REV.	DATE	REASON
D	6/7/74	To Add Documentation Requirements
C	7/27/73	DELETION OF REFERENCES TO SECTION 4.0
B	7/12/72	CHANGE MSFC SPEC. 166C TO MSFC SPEC. 166D
A	2/22/72	NON-HAZARDOUS PER KMI.1710.13A/SF
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
<i>[Signature]</i>	CCSD	9/22/71
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
<i>[Signature]</i>	LV MEC 2-3	11/12/71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE HYDRAULIC SYSTEM PURGE AND FILL (STANDBY)		2. MSC TEST NUMBER V-24527
		3. EFFECTIVITY AS REQUIRED
13. LOCATION VAB or PAD	14. COMPUTER PROC IDENTIFICATION OAH5	15. EST. TEST TIME 10 HOURS
16. SUPPORT REQUIREMENTS 1) S-18 MEASURING 2) CHEMICAL ANALYSIS LABORATORY 3) H. P. GAS 4) GROUND AND VEHICLE POWER 5) FLIGHT CONTROL 6) INDUSTRIAL WATER		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION MSFC SPECIFICATION 166D. 20C85076. TEST AND CHECKOUT REQUIREMENTS, SPECIFICATIONS AND CRITERIA FOR USE AT KSC. 60C06050		
18. ITEM CONTINUATION		

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RSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE SIB-B/1B STAGE VENT & RELIEF VALVES CRACK & RESEAT VERIFICATION		2. RSC TEST NUMBER V-24536
		3. RSC TEST SUBS AS-572 & Subs AS-206 & Subs
4. TEST OBJECTIVES The purpose of this procedure is to perform a crack & reseal verification of the LOX & LH2 propellant tank vent and relief valves.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. 1. Pilot seal crack & reseal verification of following components: A. LOX Vent & Relief Valve P/N 1A48312 B. LOX Non-Propulsive Valve P/N 1B69030 C. LH2 Vent & Relief Valve P/N 1A48257 D. LH2 Latching Relief Valve P/N 1B74535  CONFIGURATION: TEST REQUIREMENTS - SAT V - MSFC 1B76996 Components to be tested in PCOL Lab. 0.2.3.4.9.5 3.2.1.1 0.2.3.4.10.6 3.2.1.2 0.2.3.7.9.5 3.2.1.3 0.2.3.7.10.6 3.2.1.4  SAT IB - MSFC 1B86721 0.2.4.4.9.4 3.2.1.1 0.2.4.4.10.4 3.2.1.2 0.2.4.6.9.4 3.2.1.3 0.2.4.6.10.4 3.2.1.4		
D	3/16/73	Added Bench Test Reqs for S-V & S-1B
C	12/22/72	Added SIB Requirements Ref. MSFC 1B86721
B	9/8/72	Revised block 3 effectivity, revised block 4, added test requirements to block 5.
A	6/9/72	Added support requirements to block 16.
5. REV.	DATE	REASON
1. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
/S/ W. P. Tonitto	MDAC	1-10-72
10. NASA RSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
/S/ W. G. Mahoney	LV-MEC-24	1-20-72

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)	
1. TEST TITLE SIB-B/1B STAGE VENT & RELIEF VALVES CRACK & RESEAT VERIFICATION	2. EFFECTIVITY & REVISION V-24536
3. LOCATION VAB	4. EST. TEST TIME 16 Hours
5. SUPPORT REQUIREMENTS None	6. COMPUTER PROC. IDENTIFICATION N/A
7. OTHER APPLICABLE REFERENCE DOCUMENTATION	
8. ITEM CONTINUATION	

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE STAGE REMOVAL FROM VERTICAL STORAGE CELL AND INSTALLATION INTO LOW BAY CHECKOUT. DSV-4B/SAT. 1B, KSC		2. KSC TEST NUMBER V-24537	
3. EFFECTIVITY 209 & SUBS			
4. TEST OBJECTIVES THIS DOCUMENT CONTAINS INSTRUCTIONS TO REMOVE A PREVIOUSLY INSTALLED S-IVB STAGE FROM THE STORAGE CELL AND TO INSTALL STAGE INTO LOW BAY CHECKOUT CELL, NORMAL FLOW.			
5. TEST COVER BY OR EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. THE FOLLOWING OPERATIONS ARE INCLUDED: 1. COVER DEFLATION AND REMOVAL OF COVER FROM STAGE. 2. MOVE OF STAGE TO LOW BAY TRANSFER AISLE. 3. REMOVAL OF STO FORWARD ACCESS KIT. 4. REMOVAL OF FORWARD HANDLING RING. 5. INSTALL 402 FORWARD ACCESS KIT. 6. REINSTALL FORWARD HANDLING RING. 7. REMOVAL OF STORAGE DESICCANT HARDWARE AND INSTALLATION OF NORMAL FLOW DESICCANT HARDWARE. THE FOLLOWING EQUIPMENT/CONFIGURATION MUST EXIST. 1. STAGE INSTALLED INTO STORAGE CELL. 2. STAGE IS ON STORAGE DESICCANT SYSTEM.			
TEST REQUIREMENTS MSFC: N/A			
6. 6-3-74 STAGE EFEC, YO 209 & SUBS. DELETE SSCF INTERSTAGE		B. G. Englehart	
7. 7-11-72 Deleted Reference to Saturn V RD		B. G. Englehart	
8. DATE	REASON	9. DATE	
10. APPROVAL	10. ORGANIZATION	11. ORGANIZATION	12. APPROVAL DATE
	MDAC	LV-MEC-24	Jan 25, 1972

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE STAGE REMOVAL FROM VERTICAL STORAGE CELL AND INSTALLATION INTO LOW BAY CHECKOUT. DSV-4B/SAT. 1B, KSC		2. KSC TEST NUMBER V-24537	
3. EFFECTIVITY 209 & SUBS		4. EST. TEST TIME	
13. LOCATION VAB	14. COMPUTER PROC. IDENTIFICATION		
15. SUPPORT REQUIREMENTS SID-24537-D			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION TCP V-24456 TCP V-24455 TCP V-24425			
18. ITEM CONTINUATION			

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
IU PNEUMATIC SYSTEM LP BLEED DOWN TEST		V-24561	
3. TEST OBJECTIVES		4. EFFECTIVITY	
TO FUNCTIONALLY CHECK THE PNEUMATIC SYSTEM FLOW RATES AND PRESSURES DURING A LOW PRESSURE BLEED DOWN.		AS-206 & SUBS	
5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION			
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
THE PNEUMATIC SYSTEM SPHERES ARE PRESSURIZED TO 1700 PSIG BY REMOTE OPERATIONS FROM THE LCC. THE SPHERES ARE ALLOWED TO STABILIZE A MINIMUM OF 1 HOUR. THE PNEUMATIC SYSTEM FILL VALVES ARE CLOSED AND THE SPHERES PRESSURE BLEED RATE IS MONITORED FOR A MINIMUM OF 2 1/2 HOURS.			
CONFIGURATION: VEHICLE ERECTED WITH STAGE POWER APPLIED.			
PHASE: V			
<p align="center"><u>TEST REQUIREMENTS</u></p> <p>MSFC: 7921601  0.3.5.2.8  0.3.5.2.8.1  0.3.5.2.8.1.1  0.3.5.2.8.2  0.3.5.3.4.1  0.3.5.3.4.2  0.3.5.3.4</p>			
6. REV.	DATE	REASON	DATE
B	8-6-4	REVISED BLOCKS 3, 5 AND 17	
A	1-3-73	REVISED TEST REQUIREMENTS	
7. CONTRACTOR APPROVAL		8. ORGANIZATION	
S/G.E. LECKIE		IBM - K73	
9. DATE		10. APPROVAL DATE	
JUNE 30, 1972		JUNE 30, 1972	
11. NASA PSC APPROVAL		12. APPROVAL DATE	
S/PAUL W. SCHMID		JUNE 30, 1972	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
IU PNEUMATIC SYSTEM LP BLEED DOWN TEST		V-24561	
3. TEST OBJECTIVES		4. EFFECTIVITY	
		AS-206 & SUBS	
5. LOCATION		6. COMPUTER PROC. IDENTIFICATION	
LC 39A, B, C		N/A	
7. SUPPORT REQUIREMENTS		8. EST. TEST TIME	
INTERSTAGE: SIVB STAGE POWER (NOT APPLICABLE FOR 513 & 515)		~0 HOURS	
OFF-COMPLEX: N/A			
ON-COMPLEX: IBM QA IU STAGE POWER HP GAS OIS MEASUREMENTS DDAS IBM MECHANICAL			
9. OTHER APPLICABLE REFERENCE DOCUMENTATION			
7921601 10222204 MSFC-MAN-014 MSFC-MAN-008			
10. ITEM CONTINUATION			



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>															
1. TEST TITLE STAGE PREPARATION, ORDNANCE INSTALLATION AND TRANSPORTATION TO PAD, SATURN IB	2. KSC TEST NUMBER V-24562	3. EFFECTIVITY 206 & Subs															
4. TEST OBJECTIVES  PREPARE THE S-IVB-IB STAGE FOR ORDNANCE INSTALLATION AND TRANSFER FROM THE VAB TO THE PAD.																	
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. 1. CLEAR FORWARD AND AFT ACCESS KITS OF ALL UNNECESSARY EQUIPMENT AND VERIFY THAT THE KITS ARE PROPERLY INSTALLED AND SECURED. 2. VERIFY MODEL DSV-4B-357 PLATFORM INSTALLED FOR ORDNANCE INSTALLATION. 3. VERIFY EXTERNAL PLATFORMS AVAILABLE FOR ORDNANCE INSTALLATION. 4. VERIFY GROUNDING AND CLEANING PREPS FOR ORDNANCE INSTALLATION. 5. VERIFY FAIRINGS AND TUNNEL COVERS ARE INSTALLED. 6. INSURE THAT THE BLANKET PRESSURE OR DESICCANTS ARE ON THE TANKS PER PROPULSION PROCEDURE V-24462 OR V-24447, STATIC DESICCANT PROCEDURE. 7. VERIFY THAT THE THRUST STRUCTURE DOORS AND AFT INTERSTAGE DOOR HAVE BEEN INSTALLED. 8. VERIFY THE SAFETY LOCKS HAVE BEEN INSTALLED ON THE FORWARD AND AFT UMBILICAL CARRIERS. 9. VERIFY FORWARD AND AFT SWING ARM TIPS HAVE BEEN RETRACTED FROM THE VEHICLE; VERIFY MDAC RESPONSIBLE EQUIPMENT ON LUT IS SECURED AND POLICED. 10. VERIFY EQUIPMENT BETWEEN STAGE AND EXTENSIBLE PLATFORM "B" AND "C" ARE REMOVED AND THE STAGE IS READY TO MOVE TO THE PAD.  EQUIPMENT STATUS/CONFIGURATION  S-IVB STAGE HIGH BAY CHECKOUT COMPLETE  <div style="text-align: right;">TEST REQUIREMENTS None</div>																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">6. REV.</td> <td style="width: 30%;">DATE</td> <td style="width: 30%;">REASON</td> <td style="width: 10%;">Contractor Approval</td> <td style="width: 10%;">KSC Approval</td> </tr> <tr> <td colspan="2">7. CONTRACTOR APPROVAL <i>ROE</i></td> <td>8. ORGANIZATION MDAC</td> <td colspan="2">9. DATE 7-12-72</td> </tr> <tr> <td colspan="2">10. NASA-KSC APPROVAL <i>7-12-72</i></td> <td>11. ORGANIZATION LC-MEC-24</td> <td colspan="2">12. APPROVAL DATE 7/14/72</td> </tr> </table>			6. REV.	DATE	REASON	Contractor Approval	KSC Approval	7. CONTRACTOR APPROVAL <i>ROE</i>		8. ORGANIZATION MDAC	9. DATE 7-12-72		10. NASA-KSC APPROVAL <i>7-12-72</i>		11. ORGANIZATION LC-MEC-24	12. APPROVAL DATE 7/14/72	
6. REV.	DATE	REASON	Contractor Approval	KSC Approval													
7. CONTRACTOR APPROVAL <i>ROE</i>		8. ORGANIZATION MDAC	9. DATE 7-12-72														
10. NASA-KSC APPROVAL <i>7-12-72</i>		11. ORGANIZATION LC-MEC-24	12. APPROVAL DATE 7/14/72														

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE STAGE PREPARATION, ORDNANCE INSTALLATION AND TRANSPORTATION TO PAD, SATURN IB	2. KSC TEST NUMBER V-24562	
	3. EFFECTIVITY 206 & Subs	
13. LOCATION VAB HIGH BAY	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 12 HOURS
16. SUPPORT REQUIREMENTS  NONE		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2												
1. TEST TITLE S-IB STAGE REMOVAL FROM STORAGE		2. KSC TEST NUMBER V-24579 3. EFFECTIVITY AS-209 & AS-210												
4. TEST OBJECTIVES PERFORM SPECIAL OPERATIONS REQUIRED TO REMOVE THE S-IB STAGE FROM THE STORAGE TENT.														
5. TEST TITLE BY OR ON EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.														
1. DEFLATE TENT. 2. DISMANTLE FUEL AND LOX TANK PRESSURIZATION SYSTEM. (AS 209 ONLY). 3. DISMANTLE STORAGE ENCLOSURE AND CONTROLS. 4. REMOVE VEHICLE FROM TENT. 5. INSTALL THE FLAME SHIELD SUPPORT ASSEMBLY. 6. INSTALL O/B ENGINE FLAME CURTAINS. 7. INSTALL ENVIRONMENTAL AND PROTECTIVE COVERS.														
THIS PROCEDURE WILL BE ACCOMPLISHED WITH THE VEHICLE IN A VERTICAL AND HORIZONTAL CONFIGURATION.														
PHASE: N/A TEST REQUIREMENTS N/A														
<table border="1"> <tr> <td>6. DEV. DATE</td> <td>REASON</td> <td>Contractor Approval</td> <td>KSC Approval</td> </tr> <tr> <td>7. CONTRACTOR APPROVAL <i>[Signature]</i></td> <td>8. ORGANIZATION CCSD 6912</td> <td>9. DATE 6-25-74</td> <td></td> </tr> <tr> <td>10. NASA KSC APPROVAL <i>[Signature]</i></td> <td>11. ORGANIZATION RV MEC 23</td> <td>12. APPROVAL DATE 1 July 74</td> <td></td> </tr> </table>			6. DEV. DATE	REASON	Contractor Approval	KSC Approval	7. CONTRACTOR APPROVAL <i>[Signature]</i>	8. ORGANIZATION CCSD 6912	9. DATE 6-25-74		10. NASA KSC APPROVAL <i>[Signature]</i>	11. ORGANIZATION RV MEC 23	12. APPROVAL DATE 1 July 74	
6. DEV. DATE	REASON	Contractor Approval	KSC Approval											
7. CONTRACTOR APPROVAL <i>[Signature]</i>	8. ORGANIZATION CCSD 6912	9. DATE 6-25-74												
10. NASA KSC APPROVAL <i>[Signature]</i>	11. ORGANIZATION RV MEC 23	12. APPROVAL DATE 1 July 74												

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE S-IB STAGE REMOVAL FROM STORAGE		2. KSC TEST NUMBER V-24579 3. EFFECTIVITY AS-209 & AS-210
13. LOCATION VAB	14. COMPUTER PROGRAM IDENTIFICATION N/A	15. TEST TEST TIME 48 HOURS
16. SUPPORT REQUIREMENTS (1) Rocketdyne		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 60C11002 S-IB STAGE STORAGE PLAN AT KSC PEV-1164 R-3620-4 60C12272		
18. ITEM CONTINUATION		

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
GSCU FILL, DRAIN AND COOLANT TRANSFER		AS-209 & SUBS AS-512 & 513
13 LOCATION LC 39	14 COMPUTER IDENTIFICATION N/A	15 EST TEST TIME 2 MEN - 3 HOURS
16 SUPPORT REQUIREMENTS		
INTERSTAGE	SID - 26491-1 NONE	
OFF - COMPLEX	BENDIX	
ON COMPLEX	IBM QA IBM MECHANICAL LV-QUAL	
17 OTHER APPLICABLE REFERENCE DOCUMENTATION		
7919372-001		
18 ITEM CONTINUATION		



KSC OPERATIONS  
APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET

PAGE 1 OF 2

TEST TITLE  ORONITE SAMPLING	2 KSC TEST NUMBER V-26492 3 EFFECTIVITY AS-209 & SUBS
------------------------------------	--

2. TEST OBJECTIVES

TO VERIFY COOLANT USED IN IU/SIVB THERMAL CONDITIONING SYSTEM MEETS REQUIREMENTS. COOLANT USED IS ORONITE FLO-COOL 100.

3. TEST PROCEDURE AND EQUIPMENT STATUS CONFIGURATION

THIS TEST DOES ☒ DOES NOT CONTAIN HAZARDOUS OPERATIONS.

THIS PROCEDURE IS DIVIDED INTO TWO PARTS:

PART I GROUND SYSTEM VALIDATION SAMPLING  
PART II PRIMARY LOOP SAMPLE

CONFIGURATION: N/A

TEST REQUIREMENTS  
AS-209 & SUBS

MSFC: 7921601

0.3.5.2.6.1.1  
0.3.5.2.6.1.1.1  
0.3.5.2.6.1.1.2  
0.3.5.2.6.1.1.2.1  
0.3.5.2.6.1.1.2.2  
0.3.5.2.6.1.1.2.3  
0.3.5.2.6.1.1.3  
0.3.5.2.6.1.2  
0.3.5.2.6.1.2.1  
0.3.5.2.6.1.2.2  
0.3.5.2.6.1.2.3

DATE: IB, III, IV, V, VI

1. REVISION	2. REVISION BLOCK 5	3. REVISION DATE	4. REVISION BY
1. REVISION	2. REVISION BLOCK 5	3. REVISION DATE	4. REVISION BY
1. REVISION	2. REVISION BLOCKS 3, 5, & 16	3. REVISION DATE	4. REVISION BY
1. REVISION	2. UPDATE MSFC REQTS. REF RSCC 53	3. REVISION DATE	4. REVISION BY

1. DATE	2. REASON	3. CONTRACTOR APPROVAL	4. KSC APPROVAL
1. DATE	2. REASON	3. CONTRACTOR APPROVAL	4. KSC APPROVAL
1. DATE	2. REASON	3. CONTRACTOR APPROVAL	4. KSC APPROVAL
1. DATE	2. REASON	3. CONTRACTOR APPROVAL	4. KSC APPROVAL

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)

PAGE 2 OF 2

1. TEST TITLE  ORONITE SAMPLING	2 KSC TEST NUMBER V-26492 3 EFFECTIVITY AS-209 & SUBS
---------------------------------------	--

13. LOCATION LC39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME N/A
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15. SUPPORT REQUIREMENTS

INTERSTAGE: NONE

OFF-COMPLEX: BENDIX

ON-COMPLEX: IBM QA  
IBM MECHANICAL  
LV QUAL

17. OTHER APPLICABLE REFERENCE DOCUMENTATION  
7919372-1

18. ILM CONTINUATION



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
TEST TITLE GSCU & FCVB FUNCTIONAL TEST (STANDBY)		KSC TEST NUMBER V-26497
		EFFECTIVITY AS REQUIRED
<p>TO VERIFY THE GROUND SUPPORT COOLING UNIT (GSCU), FLOW CONTROL VALVE BOX (FCVB), AND SERVICE LINES ARE OPERATIONAL.</p>		
<p>TEST TYPE: <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p>		
<p>1. THE GSCU'S, FCVB, AND ASSOCIATED LINES ARE SYSTEMATICALLY INSPECTED TO VERIFY ALL LINES, FITTINGS, ETC. ARE PROPERLY CONNECTED.</p> <p>2. THE FCVB IS CYCLED AND THE FCVB TEST SET INDICATORS ARE MONITORED FOR WATER RETURNED.</p> <p>3. LINES ARE INCREMENTALLY PRESSURIZED TO 50 PSIG WITH GN2 AND ARE LEAK CHECKED USING LEAK DETECTOR SOLUTION.</p> <p>4. PRESSURE DECAY CHECKS ARE MADE AT 50 PSIG TO INSURE INTEGRITY.</p> <p>5. GSCU IS TESTED TO VERIFY PRESSURES, FLOW RATES, AND TEMPERATURES.</p> <p>6. PNEUMATIC BYPASS, HIGH AND LOW PRESSURE OUTPUT SWITCHES, AND PNEUMATIC CONTROLS ARE FUNCTIONALLY TESTED.</p> <p>7. THE UNITS ARE OPERATED WITH FLOW THROUGH THE HEAT LOAD SIMULATOR TO VERIFY TEMPERATURE MAY BE STABILIZED WITH A VARYING HEAT LOAD.</p>		
<p>OPERATION: INSTALLED ON THE LOT WITH GROUND POWER AND FACILITY GN2 APPLIED.</p>		
TEST REQUIREMENTS N/A		
REVISION IS THE REV. HISTORY CONTINUATION		
REV. NO. 1, PRELIMINARY TEST		
REV. NO. 2, REVISED BLOCKS 3, 5, AND 16		
REASON		
DATE		
APPROVAL DATE		

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE GSCU & FCVB FUNCTIONAL TEST (STANDBY)		2. KSC TEST NUMBER V-26497
		3. EFFECTIVITY AS REQUIRED
13. LOCATION LC39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 2 MEN, 30 HOURS
16. SUPPORT REQUIREMENTS		
<p>1. INTERSTAGE REQUIREMENTS: N/A</p> <p>2. OFF-COMPLEX SUPPORT: NONE</p> <p>3. ON-COMPLEX SUPPORT: IBM QA IBM MECHANICAL</p>		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
<p>MSFC-MAN-008 IBM NO-JB20007</p> <p>MSFC-SPEC-164 MC-245</p>		
18. ITEM CONTINUATION		
D	4/2/73	REVISED BLOCKS 1 & 3
E	7/17/74	REVISED BLOCKS 13 & 17

KSC OPERATIONS APOLLO-SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
S-1B HOLDDOWN ARM QUALIFICATION TEST	V-26532	
3. TEST OBJECTIVES	3. EFFECTIVITY	
THE OBJECTIVE OF THIS TEST IS TO VERIFY THE ENTIRE HDA SYSTEM IS FUNCTIONALLY ACCEPTABLE TO SUPPORT LAUNCH.	206 & Subs	
4. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION		
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
PART I		
The separator flex hoses are plugged and the panel is actuated from the firing accessories control console, in the LCC, to verify panel operation and to leak check the final panel connections.		
PART II		
The HDA pneumatic system is connected in such a way as to check the reverse flow in the separator check valves. The release valves are operated independently to verify proper operation. The primary and secondary pneumatic drops are performed from the firing accessories control console, the release valve and arm release times are recorded and final leak checks achieved.		
PART III		
The final drop is considered a flight configuration drop. All explosives are simulated and all times recorded. The system is returned to a standby configuration ready for testing and launch.		
CONFIGURATION: Vehicle is in a vertical mated position.		
TEST REQUIREMENTS MSFC - N/A		
5. REVISIONS	6. APPROVALS	
a. 4-11-71 Deletion of explosive release changes - the hazard level	b. 4-11-71 Explosive Release Requirement Deleted	
c. 6/22/72 Effectivity changed per TL-2-17, Rev F	d. 6/27/72	
7. SIGNATURE	8. ORGANIZATION	9. DATE
CONTRACTOR APPROVAL S/A Gene E. Gorrell	CCSD	3-24-71
KSC APPROVAL S/A G. H. Robinson	LV-MEC-12	3-23-71

APOLLO-SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
S-1B Holddown Arm Qualification Test	V-26532	
3. LOCATION	3. EFFECTIVITY	
ML	206 & Subs	
4. COMPUTER PROC. IDENTIFICATION	4. EST. TEST TIME	
N/A	32 Hrs.	
5. SUPPORT REQUIREMENTS		
DEE-6		
Vehicle Networks		
RCA 110A Computer		
Ground Networks		
OIS		
6. OTHER APPLICABLE REFERENCE DOCUMENTATION		
TM-627 HOLDDOWN ARM O&M MANUAL 75M01821 HOLDDOWN ARM ASSEMBLY		
7. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
VACUUM PUMP P M AND CHECKOUT		2 KSC TEST NUMBER V-26533	
		3 EFFECTIVITY GSE-LC-39	
4 TEST OBJECTIVES To maintain the KC-8R, KC-8D, and KTC-21D vacuum pumps in optimum operation condition.			
5 TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  Prime test organization is propellants.  Perform operational checkout and preventive maintenance on vacuum pumps.			
PHASE <u>N/A</u>		TEST REQUIREMENTS  N/A	
<div style="text-align: center; font-size: 2em; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>			
6 REV DATE		7 REASON	
8 CONTRACTOR APPROVAL <i>C. C. Moten</i>		9 DATE 3/26/71	
10 NASA-KSC APPROVAL <i>E. J. Johnson</i>		11 ORGANIZATION CCSD	
		12 APPROVAL DATE 3/26/71	
		13 ORGANIZATION LV-MCC-32	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1 TEST TITLE VACUUM PUMP P M AND CHECKOUT		2 KSC TEST NUMBER V-26533	
		3 EFFECTIVITY GSE-LC-39	
13 LOCATION Shop (VAB)	14 COMPUTER PROC IDENTIFICATION N/A	15 EST TEST TIME One (1) Day	
16 SUPPORT REQUIREMENTS  NONE			
17 OTHER APPLICABLE REFERENCE DOCUMENTATION (A) Kinney Corp.; KC-8 Service Manual (B) Kinney Corp.; KTC-21 Service Manual			
18 ITEM CONTINUATION			
<div style="text-align: center; font-size: 2em; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
IU AIRCRAFT LOADING	V-26546	
	3. EFFECTIVITY	
	AS REQUIRED	
4. TEST OBJECTIVES		
LOAD IU ON SUPER GUPPY AIRCRAFT		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION (REPLACES IV-26008)		
THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
THE IU IS LOADED ONTO THE ADAPTER THAT HAS BEEN PREVIOUSLY FASTENED TO THE CARGO LIFT TRAILER. BOLTS ARE INSTALLED TO FASTEN IU TO ADAPTER AND THEN THE HOISTING SLING IS DISCONNECTED.		
THE CLT IS ALIGNED WITH SUPER GUPPY AIRCRAFT, AND GENERAL PURPOSE PALLET WITH IU IS LOADED INTO THE AIRCRAFT. THE PALLET IS THEN SECURED IN THE AIRCRAFT, THE CLT REMOVED, AND THE AIRCRAFT SECURED FOR FLIGHT.		
TEST REQUIREMENTS		
MSFC: N/A		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
<i>[Signature]</i>	IBM - K73	June 21, 1971
10. NASA/KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
<i>[Signature]</i>	LV-NCC-25	June 21, 1971

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
IU AIRCRAFT LOADING	V-26546	
	3. EFFECTIVITY	
	AS REQUIRED	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME
SKID STRIP	N/A	6 MEN -- 12 MAN HOURS
16. SUPPORT REQUIREMENTS		
INTERSTAGE: NONE		
OFF-COMPLEX: RD 40090-3F		
ON-COMPLEX: IBM QA IBM MECHANICAL KSC SAFETY PAA SAFETY		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
90M01996 SK-95-573 90M01969 R-TEST-V-102		
18. ITEM CONTINUATION		



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
IU HANDLING EQUIPMENT P/M	V-26547	
	3. EFFECTIVITY	
	GSE	
4. TEST OBJECTIVES		
MAINTAIN THE IU HOISTING SLINGS AND COMPONENT HANDLING EQUIPMENT IN A CLEAN PRESERVED OPERABLE CONDITION.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION (REPLACES IV-26013)		
THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
A. SEMI-ANNUAL PREVENTIVE MAINTENANCE IS PERFORMED ON:		
1. IU COMPONENT HANDLING EQUIPMENT		
2. IU (ERECTION) SLING HT-322-13000		
3. IU PROTECTIVE COVER HOISTING CABLE (V36048)		
B. PREVENTIVE MAINTENANCE CONSISTS OF:		
1. HANDLING EQUIPMENT GENERAL MAINTENANCE		
2. HOISTING EQUIPMENT ADJUSTMENT PROCEDURE		
3. HOISTING EQUIPMENT PROOFLOADING PROCEDURE		
CONFIGURATION: LABORATORY		
TEST REQUIREMENTS		
MSFC: N/A		
THALES: N/A		
REPLACE BLOCKS 9 AND 17		
DATE	REASON	9. DATE
	8. ORGANIZATION	Contractor Approval
	IBM/K73	KSC Approval
	11. ORGANIZATION	12. APPROVAL DATE
	June 25	June 21, 1971

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE		2. KSC TEST NUMBER
IU HANDLING EQUIPMENT P/M		V-26547
		3. EFFECTIVITY
		GSE
13. LOCATION	14. COMPUTER PROC IDENTIFICATION	15. EST. TEST TIME
LABORATORY	N/A	2 MEN, 6 MAN HOURS
16. SUPPORT REQUIREMENTS		
INTERSTAGE REQUIREMENTS: N/A		
OFF-COMPLEX SUPPORT: SENDIX WIRE ROPE SHOP		
ON-COMPLEX SUPPORT: IBM QA		
IBM SAFETY		
LV-QAL		
KSC SAFETY		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
KSC-STD-S-0001 B		
DRAWING HT-322-13000		
18. ITEM CONTINUATION		

KSC OPERATIONS  
APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET

PAGE 1 OF 2

1. TEST TITLE <b>IU CORROSION INSPECTION</b>	2. KSC TEST NUMBER <b>V-26548</b>
	3. EFFECTIVITY <b>AS-209 &amp; SUBS</b>

4. TEST OBJECTIVES

TO THOROUGHLY INSPECT THE INSTRUMENT UNIT EXTERIOR, INTERIOR, TUBING/FLEXHOSES/  
FITTINGS, COLD PLATES AND COMPONENTS FOR:

1. ANY EVIDENCE OF CORROSION OR MATERIAL DETERIORATION.
2. ANY EVIDENCE OF STRESS CORROSION CRACKING IN PARTS SUSCEPTIBLE.

5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION

THIS TEST ☐ DOES ☒ DOES NOT CONTAIN HAZARDOUS OPERATIONS.

1. INSPECTION OF ALL STRESS CORROSION SUSCEPTIBLE PARTS WILL BE PERFORMED WITHIN 97 DAYS FOLLOWING:
  - (A) LAST STRESS CORROSION INSPECTION PRIOR TO IU SHIPMENT TO KSC.
  - (B) POST-STORAGE STRESS CORROSION INSPECTION, IF IU WAS PREVIOUSLY IN LONG-TERM STORAGE AT KSC.
2. SUBSEQUENT STRESS CORROSION INSPECTION(S) WILL BE PERFORMED AT 90 ± 7 DAY INTERVALS, WITH THE FINAL INSPECTION OCCURRING WITHIN 30 DAYS OF LAUNCH.
3. IN ADDITION, A COMPREHENSIVE CORROSION/MATERIAL DETERIORATION INSPECTION WILL BE PERFORMED ON THE IU STRUCTURE, UMBILICAL, CABLE TRAY, BRACKETING, TCS/GN2 SYSTEM TUBING & COMPONENTS AND COMPONENT/COLD PLATE INTERFACES. THIS INSPECTION WILL BE PERFORMED COINCIDENT WITH STRESS CORROSION INSPECTION WHERE PRACTICABLE, BUT IS SPECIFICALLY DESIGNED FOR PERFORMANCE ONCE PRIOR TO ROLL-OUT AND SUBSEQUENTLY ONCE WITHIN 30 DAYS PRIOR TO LAUNCH.

CONFIGURATION: CABLE TRAY INSPECTION REQUIRES REMOVAL OF HYPERGOL PROTECTION CABLE TRAY COVERS.

PHASE - SEE BLOCK 18                      TEST REQUIREMENTS - SEE BLOCK 18

C	7-31-74	REVISED BLOCKS 3, 17 AND 18	<i>D. X. Riley</i>	<i>P. W. Schmid</i>
B	2/11/74	REVISED BLOCKS 3, 4, 5 AND 17	<i>J. E. Leckie</i>	<i>P. W. Schmid</i>
A	4/7/72	REVISED BLOCKS 1, 3, 5, 13 AND 16	G. E. LECKIE	P. W. SCHMID

6. REV. DATE	REASON	Contractor Approval	KSC Approval
7. CONTRACTOR APPROVAL G. E. LECKIE	8. ORGANIZATION IBM - K73	9. DATE 6-21-71	
10. NASA PSC APPROVAL PAUL W. SCHMID	11. ORGANIZATION LV-MEC-25	12. APPROVAL DATE 6-1-71	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)

PAGE 4 OF 2

1. TEST TITLE <b>IU CORROSION INSPECTION</b>	2. KSC TEST NUMBER <b>V-26548</b>
	3. EFFECTIVITY <b>AS-209 &amp; SUBS</b>

13. LOCATION <b>MAB, LC39</b>	14. COMPUTER PROC. IDENTIFICATION <b>N/A</b>	15. EST. TEST TIME <b>4 MEN - 10 HOURS</b>
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16. SUPPORT REQUIREMENTS

INTERSTAGE REQUIREMENTS: NONE

OFF-COMPLEX SUPPORT: NONE

ON-COMPLEX SUPPORT: IBM QA  
LV QAL  
IBM MECHANICAL  
IBM NETWORKS

17. OTHER APPLICABLE REFERENCE DOCUMENTATION				
10Z22204-1 (SAT 1B)	30Z13100-1	30Z13106-1	7914561-1	20Z42025-1
TM-011-001-2H	30Z13104-1	11Z00055-5 (SAT 1B)		7910120-3
7921601	30Z13105-1	7921601		30Z13107-1

18. ITEM CONTINUATION

PHASE: IV, V, VI

TEST REQUIREMENTS

MSFC: 7921601                      TM-011-001-2H

0.3.3.2.1                      8.1.3.4  
0.3.3.2.1.1  
0.3.3.2.2

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE  EQUIPMENT PRESSURIZATION		2. KSC TEST NUMBER V-26549	
		3. EFFECTIVITY AS-206 & SUBS	
4. TEST OBJECTIVES TO PRESSURIZE TEST EQUIPMENT WITH GN2, INCLUDING THE STAGE-MOUNTED INTERSTAGE SEPARATION SIMULATOR (SAVAGE SAM), IU STAGE COMPONENTS, IU PRESSURIZED LIGHTING SYSTEM AND IU OIS BOXES.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. <u>EQUIPMENT PRESSURIZATION</u> THE 750 PSIG GN2 PRESSURE SOURCE, PURGE SUPPLY IS SUPPLIED TO THE END OF THE SWING ARM. THE INLET OF A REGULATED TEST PANEL IS CONNECTED TO THE GN2 SUPPLY, AT THE SWING ARM BY A FLEX HOSE. EQUIPMENT TO BE PRESSURIZED IS CONNECTED TO THE OUTLET OF THE REGULATED TEST PANEL WITH A FLEX HOSE AND PRESSURIZED. <u>LIGHT &amp; IU OIS BOX PRESSURIZATION</u> THE GN2 PRESSURE SOURCE, SUPPLIED FROM THE GN2 PURGE PANEL (750 PSI OUTLET) FOR SATURN V, TO THE END OF THE SWING ARM. THE INLET OF A REGULATED TEST PANEL IS CONNECTED TO THE GN2 SUPPLY AT THE SWING ARM BY A FLEX HOSE. THE IU OIS BOXES ARE CONNECTED TO THE OUTLET OF THE REGULATED TEST PANEL WITH FLEX HOSES. THE LIGHTING SYSTEM PRESSURE CONTROL BOX IS CONNECTED TO THE OUTLET OF THE REGULATED TEST PANEL WITH A FLEX HOSE AND IS USED TO CONTROL THE PRESSURE IN THE LIGHTING SYSTEM.  PHASE: VI  <u>TEST REQUIREMENTS</u>  NONE			
D	8-6-4	REVISED BLOCKS 3, 5 AND 17	<i>D. H. R. Long</i>
C	1-31-3	REVISED MSFC REQUIREMENTS & BLOCK 17	G.E. LECKIE P. SCHMID
B	11-7-2	REVISED BLOCKS 5 AND 16	G.E. LECKIE P. SCHMID
A	1-19-72	REVISED BLOCKS 3, 5, 16 AND 17	G.E. LECKIE P. SCHMID
6. REV	DATE	REASON	Contractor Approval KSC Approval
8. CONTRACTOR APPROVAL G.E. LECKIE		9. ORGANIZATION IBM - K73	9. DATE JUNE 21, 1971
10. NASA/KSC APPROVAL PAUL W. SCHMID		11. ORGANIZATION LV-MEC-25	12. APPROVAL DATE JUNE 21, 1971

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE  EQUIPMENT PRESSURIZATION		3. KSC TEST NUMBER V-26549	
		3. EFFECTIVITY AS-206 & SUBS	
13. LOCATION LC 39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 2 MEN 2 MAN HOURS	
16. SUPPORT REQUIREMENTS SID-Y-265491 (AS-206 & SUBS) RD 40092-38B (AS-512 & SUBS)  INTERSTAGE REQUIREMENTS: N/A  OFF-COMPLEX SUPPORT: N/A  ON-COMPLEX SUPPORT: IBM QUALITY ASSURANCE HP GAS KSC SAFETY IBM MECHANICAL			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION T.O. 00-25-223 7921601 TM-542 TM-475			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE IU STORAGE AND MAINTENANCE		2. KSC TEST NUMBER V-26682	
		3. EFFECTIVITY AS-209 & SUBS	
4. TEST OBJECTIVES TO VERIFY THE IU ENVIRONMENT AND PHYSICAL CONDITION REMAIN WITHIN SPECIFIC REQUIREMENTS DURING THE STORAGE PERIOD.			
5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS PROCEDURE SPECIFIES THE REQUIREMENTS TO BE MAINTAINED ON THE IU WHILE IN STORAGE BY PERFORMANCE OF THE FOLLOWING TASK AT SPECIFIED INTERVALS.  VERIFICATION OF TEMPERATURES ON DAILY BASIS. VAPOR BARRIER HUMIDITY CHECKS WEEKLY. VAPOR BARRIER AIR SAMPLE AT 3 MONTH INTERVALS. IU CORROSION INSPECTION AND VERIFICATION OF FLATNESS AT 6 MONTHS.  <div style="text-align: center;"><u>TEST REQUIREMENTS</u> N/A</div>			
6. REV.	DATE	REASON	DATE
A	2-11-74	REVISED BLOCKS 3 AND 17	12-11-73
7. CONTRACTOR APPROVAL <i>[Signature]</i>		8. ORGANIZATION IBM 401	
9. NASA-KSC APPROVAL <i>[Signature]</i>		10. APPROVAL DATE 12-11-73	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE IU STORAGE AND MAINTENANCE		2. KSC TEST NUMBER V-26682	
		3. EFFECTIVITY AS-209 & SUBS	
13. LOCATION MSOB	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 2 MEN, 1500 HOURS	
16. SUPPORT REQUIREMENTS  INTERSTAGE: N/A  OFF-COMPLEX: BENDIX SAMPLING  ON-COMPLEX: O & C HIGH BAY CRANE OPERATOR KSC SAFETY IBM QA IBM MECHANICAL			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  STAGE STORAGE PLAN - DRL LINE ITEM NO. 057			
18. ITEM CONTINUATION			



KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE IU REMOVAL FROM LONG TERM STORAGE		2. KSC TEST NUMBER V-26683
		3. EFFECTIVITY AS-209 & SUBS

4. TEST DESCRIPTIONS  
TO TERMINATE IU LONG TERM STORAGE, PERFORM POST STORAGE INSPECTIONS AND TRANSPORT IU FROM O&C BUILDING TO VAB 1L1 TEMPORARY STORAGE AREA.

5. TEST PREPARATION AND SUPPORT STATUS CONFIGURATION

THIS TEST ☒ DOES ☐ DOES NOT CONTAIN HAZARDOUS OPERATIONS.  
THIS PROCEDURE SPECIFIES THE REQUIREMENTS FOR REMOVAL OF THE IU FROM STORAGE BY PERFORMANCE OF THE FOLLOWING TASKS:

THE VAPOR BARRIER WILL BE REMOVED.  
PRIOR TO REMOVAL FROM THE STORAGE STATION THE IU WILL BE CHECKED FOR VERIFICATION OF FLATNESS REQUIREMENT.  
A CORROSION INSPECTION WILL BE PERFORMED.  
A FASTENER TORQUE CHECK WILL BE PERFORMED.  
SHOCK RECORDERS WILL BE INSTALLED ON THE IU AND TRANSPORTER.  
THE IU WILL BE POSITIONED ON THE TRANSPORTER AND TRANSPORTED TO VAB 1L1.  
THE STORAGE STATIONS WILL BE SECURED AS REQUIRED.

PHASE N/A		TEST REQUIREMENTS N/A	
REVISION	REASON	DATE	APPROVAL
1	REVISED BLOCKS 1, 4 AND 5	1-14-74	J. FAVOR
2	REVISED BLOCKS 3 AND 17	1-11-74	P. SCHMID
DATE	REASON	DATE	APPROVAL
1-11-74	IBM - 906	1-14-74	J. FAVOR
1-11-74	LV-MEC-25	1-11-74	P. SCHMID

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE IU REMOVAL FROM LONG TERM STORAGE		2. KSC TEST NUMBER V-26683
		3. EFFECTIVITY AS-209 & SUBS
13. LOCATION O & C AND 1L1	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 6 MEN, 350 HOURS
16. SUPPORT REQUIREMENTS INTERSTAGE: N/A OFF-COMPLEX: BENDIX SHOPS ON-COMPLEX: O&C HIGH BAY CRANE OPERATOR KSC SAFETY SECURITY LV-QUAL IBM QUAL IU VEHICLE NETS IBM MECHANICAL		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION STAGE STORAGE PLAN - DRL LINE ITEM NO 057		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE PEAK VOLTAGE MONITOR OPERATION AND INDUCED VOLTAGE DETECTOR INSTALLATION, OPERATION, AND REMOVAL		2. KSC TEST NUMBER V-27250	
		3. EFFECTIVITY 512, 206 - 210	
4. TEST OBJECTIVES To provide a procedure to install, functionally operate, and remove the S-IVD Stage Induced Voltage Detection System and to operate the Peak Voltage Monitor GSE System located on the 220' of the Mobile Launcher.			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  This test shall proceed as follows: 1. Install the IVD's and interconnecting cable prior to rollout. 2. Periodically monitor the outputs of the IVD's and PVM for indication of induced voltage and battery status. 3. Replace batteries when required. 4. Remove the IVD's prior to removal of the Aft Access Kit during CDDT. 5. Reinstall the IVD equipment upon completion of CDDT. 6. Monitor the outputs as in 2 above. 7. Remove the IVD's and interconnecting cable prior to removal of the Aft Access Kit during Countdown.  MSFC T.R. 1886721 and 1876996 Not Applicable			
6. 7-23-74 ADDITION OF VEHICLE 210 EFFECTIVITY		R. J. [Signature]	
7. 9-21-72 ADDITION OF PEAK VOLTAGE MONITOR OPERATION		D. [Signature]	
7. CONTRACTOR APPROVAL [Signature]		8. ORGANIZATION MSAC	
9. DATE 8-21-72		10. NASA-KSC APPROVAL S/B D. R. JONES	
11. ORGANIZATION LV-GDC-23		12. APPROVAL DATE 8-21-72	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE PEAK VOLTAGE MONITOR OPERATION AND INDUCED VOLTAGE DETECTOR INSTALLATION, OPERATION, AND REMOVAL		2. KSC TEST NUMBER V-27250	
		3. EFFECTIVITY 512, 206 - 210	
13. LOCATION LC 39	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME	
16. SUPPORT REQUIREMENTS			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 1872582 Installation, Induced Voltage Detector 1872584 Cable Assembly, IVD			
18. ITEM CONTINUATION			

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232 III

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE Radio Frequency System Test		2. PSC TEST NUMBER V-28003	
		3. EFFECTIVITY GSE	
4. TEST OBJECTIVES To verify performance of the RF portion of the Telemetry Checkout Equipment, including RF patching options.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. The following checks will be performed: <ul style="list-style-type: none"> <li>Attenuator check</li> <li>Multicoupler checks</li> <li>Preamplifier checks</li> <li>Receiver power supply voltage checks</li> <li>Receiver noise figure checks</li> <li>I.F. checks</li> <li>Second Local Oscillator checks</li> <li>Receiver AGC output checks</li> <li>Video output level checks</li> <li>Receiver meter checks</li> <li>Pre-D down-converter checks</li> </ul> Various patching options will also be exercised. This procedure also contains receiver alignment sequences to be performed as required. This procedure is performed prior to processing each launch vehicle.			
<b>CANCELLED</b>			
6. REV.	DATE	REASON	
C	9/6/74	Cancel	
7. CONTRACTOR APPROVAL		8. ORGANIZATION	
s/Steven H. Dodge		LV-INS-12	
10. NASA KSC APPROVAL		11. ORGANIZATION	
s/L. C. Blanchard		LV-INS-12	
		9. DATE	
		12. APPROVAL DATE	
		2-13-72	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE Radio Frequency System Test		2. KSC TEST NUMBER V-28003	
		3. EFFECTIVITY GSE	
13. LOCATION LCC 39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 80 manhours	
16. SUPPORT REQUIREMENTS  LCC Telemetry Checkout Equipment.			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			
<b>CANCELLED</b>			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE Frequency Modulation Discriminator Test		2. KSC TEST NUMBER V-28004	
		3. EFFECTIVITY GSE	
4. TEST OBJECTIVES To verify proper operation of the discriminator calibrators and stage module and common module discriminators.			
5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. The following tests will be performed: Calibrator output amplitude, pre-emphasis, center frequency, bandedges and linearity. Discriminator bandedges, linearity, output level, calibrations, and light indicator operation. This test will be performed prior to processing each vehicle.			
CANCELLED			
6. REV.	DATE	REASON	9. DATE
C	9/6/74	Cancel	9-9-74
7. CONTRACTOR APPROVAL S/Steven H. Dodge		8. ORGANIZATION LV-IIS-12	Contractor Approval
10. NASA/KSC APPROVAL S/L. C. Blanchard		11. ORGANIZATION LV-IIS-12	12. APPROVAL DATE 1-05-72

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE Frequency Modulation Discriminator Test		2. KSC TEST NUMBER V-28004	
		3. EFFECTIVITY GSE	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME 80 manhours	
16. SUPPORT REQUIREMENTS LCC Telemetry Checkout Equipment.			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			
CANCELLED			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE Tape Recorder Test		2. KSC TEST NUMBER V-28005	
3. EFFECTIVITY GSE			
4. TEST OBJECTIVES To verify proper operation of Telemetry Checkout Equipment tape recorders.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. The following tests will be performed: Capstan speed, wow and flutter, and tape transport control operation. Operation of reproduce heads and amplifiers. Operation of record heads and amplifiers. System performance in recording and reproducing test signals. Verify bi-directional operation capability. Normal switching and patching operations will be exercised. This procedure is performed prior to processing each launch vehicle.			
6. REV. DATE C 9/10/74 Release for ASTP		7. 9-10-74 Steven H. Dodge	
8. CONTRACTOR APPROVAL s/Steven H. Dodge		9. DATE 1/03/72	
10. NASA/KSC APPROVAL s/L. C. Blanchard		11. ORGANIZATION LV-INS-12	
		12. APPROVAL DATE 2/22/72	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE Tape Recorder Test		2. KSC TEST NUMBER V-28005	
3. LOCATION LCC 39		4. COMPUTER PROC. IDENTIFICATION GSE	
5. SUPPORT REQUIREMENTS LCC Telemetry Checkout Equipment LCC TCE Magnetic Tape Recording		6. EST. TEST TIME 80 manhours	
7. OTHER APPLICABLE REFERENCE DOCUMENTATION			
8. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE Telemetry Checkout Equipment PCM/DDAS Test		2. KSC TEST NUMBER V-28008	
3. EFFECTIVITY GSE			
4. TEST OBJECTIVES To verify operational readiness of the TRS-1 Digital Receiving Stations			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. The following checks will be performed: Check panel meters of the power supply panel for proper voltage and current indications. Verify proper operation of the digital signal simulator, checking clock timing, external sync output, 600 KHZ modulated output, NRZ-S data output and sync word configuration. Using the digital signal simulator, verify proper operations of the synchronizer, correlator, data control, data switch, and output registers. Verify all bit and mode options, and verify operation of the quick-look panel meters. Verify proper operating voltages for each D/A converter, verify proper operation of the DAC calibrator, and verify proper operation and calibration of each D/A converter. This procedure is performed prior to processing each launch vehicle.			
<b>CANCELLED</b>			
C	9/6/74	Cancel	9-9-74 Steven Dodge Contractor Approval
6. APPROVAL		7. DATE	
s/ Steven H. Dodge		LV-INS-12	
8. NASA-KSC APPROVAL		9. APPROVAL DATE	
s/ L. C. Blanchard		1-3/-72	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE Telemetry Checkout Equipment PCM/DDAS Test		2. KSC TEST NUMBER V-28008	
3. EFFECTIVITY GSE			
13. LOCATION LCC39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 40 manhours	
16. SUPPORT REQUIREMENTS LCC Telemetry Checkout Equipment			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			
<b>CANCELLED</b>			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE Telemetry Checkout Equipment Readiness Test		2. KSC TEST NUMBER V-28009
		3. EFFECTIVITY GSE
4. TEST OBJECTIVES  To verify operational readiness of the Common Module, CIF Interface, Room Entry Patch Rack, and Stage Module PCM Synchronizers.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  The following tests will be performed:  Receiver checks Discriminator checks Oscillograph Recorder checks Pen Recorder checks Tape Recorder checks Pre-D Demodulator checks CIF Interface Test Test Patching TRC-1 checks  This test will be performed prior to vehicle tests requiring TCE Support.  Phase: <u>NA</u> Test Requirements: <u>NA</u>		
<h1>CANCELLED</h1>		
6. DATE	7. APPROVAL	8. REASON
B 9/6/74	Cancel	9-4-74 Steven Dodge
7. APPROVAL		9. DATE
s/Steven H. Dodge		LV-INS-12
10. NASA-KSC APPROVAL		11. ORGANIZATION
s/L. C. Blanchard		LV-INS-12
		12. APPROVAL DATE
		1-19-72

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE Telemetry Checkout Equipment Readiness Test		2. KSC TEST NUMBER V-28009
		3. EFFECTIVITY GSE
13. LOCATION LCC	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME
16. SUPPORT REQUIREMENTS  LCC Telemetry Checkout Equipment (TCE) LCC TCE Magnetic Tape Recording		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		
<h1>CANCELLED</h1>		



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE II PAGE 1 OF 2	
1. TEST TITLE  S-IC TELEMETRY SYSTEM SPARES CHECKOUT		2. KSC TEST NUMBER V-28011 3. EFFECTIVITY REV D. As required	
4. TEST OBJECTIVES  To verify proper performance and operational readiness of the S-IC Telemetry System spares.			
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is S-IC Stage  The following S-IC telemetry subsystems shall be tested individually to verify that all components are functioning properly and all subsystem parameters are within specified limits.  F1 Model 270 MUX, RDSM, Model 301 PCM/DDAS Assy, and PCM/RF Assy F1 PAM/FM T/M Assy. and RF Assy. A/B TM Calibrator and DC Isolator COAXIAL SWITCH MULTICOUPLER RF TERMINATION POWER DIVIDER  <u>Test Requirements</u> MSFC: NA			
D	1-9-70	ADDITION OF SPARE ITEMS FOR TEST	
C	5/23/9	Changed effectivity from 503 & Subs to As Required. Removed items not applicable to 506 & On.	
B	1/14/9	Deleted the following portions of the test because they are not required after AS-505: S1 Model 245 MUX, SS/FM TM and Top Deck Assy, & RF Assy S2 Model 245 MUX, SS/FM TM and Top Deck Assy, & RF Assy F2 PAM/FM T/M Assy and RF Assy F3 PAM/FM TM Assy and RF Assy A/B Tape Recorder	
A	1/11/68	Revise effectivity	
6. REV.	DATE	REASON	
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE	
s/H.L.Burton/J.S.Clements	BATC 5-8521/5-8531	11/7/67	
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE	
s/L. C. Blanchard	LV-INS-12	11/7/67	

KSC FORM 23-338 (7/67)

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE III PAGE 2 OF 2	
1. TEST TITLE  S-IC TELEMETRY SYSTEM SPARES CHECKOUT		2. KSC TEST NUMBER V-28011 3. EFFECTIVITY As Required	
13. LOCATION LCC	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 Hrs.	
16. SUPPORT REQUIREMENTS  Timing LCC Telemetry Checkout Equipment LCC TCE Recording RF Clearance			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE C-BAND TRANSPONDER BENCH TEST (STANDBY)		2. KSC TEST NUMBER V-28054
3. TEST OBJECTIVES A. CONFIRM FLIGHT READINESS OF FLIGHT C-BAND TRANSPONDER. B. CONFIRM FLIGHT READINESS OF SPARE C-BAND TRANSPONDER.		4. EFFECTIVITY AS REQUIRED
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  DESCRIPTION: AFTER POWER IS APPLIED AND THE PROPER WARMUP TIME OBSERVED, SIGNALS WILL BE SENT BETWEEN THE C-BAND TRANSPONDER AND THE C-BAND TEST SET IN THE RF LAB. POWER OUTPUT WILL BE MEASURED BY THE USE OF A POWER METER. RECEIVER SENSITIVITY WILL BE MEASURED BY DECREASING THE SIGNAL LEVEL INPUT TO THE TRANSPONDER TO THE POINT OF COUNTDOWN. RECEIVER AND TRANSMITTER CENTER FREQUENCIES AND RECEIVER BANDWIDTH WILL BE MEASURED WITH THE USE OF A FREQUENCY COUNTER. RECOVERY TIME WILL BE MEASURED BY INTRODUCING A SECOND PAIR OF INTERROGATION PULSES AND MEASURING HOW CLOSE THE TWO GROUPS OF PULSES CAN BE AND THE TRANSPONDER STILL REPLY TO BOTH GROUPS. PULSE SHAPE, DELAY TIME AND PULSE CODE SPACING WILL BE MEASURED BY OBSERVING THE DETECTED PULSE OUTPUTS ON AN OSCILLOSCOPE. ALL TELEMETRY OUTPUTS WILL BE MEASURED BY INTRODUCING DIFFERENT PRF'S AND INPUT SIGNAL LEVELS. THE INHIBIT CIRCUITRY WILL BE CHECKED BY INSURING THAT THERE ARE NO REPLIES WHILE THE TRANSPONDER IS INHIBITED. ANY RANDOM TRIGGERING WILL BE OBSERVED.  (CONT. BLOCK 5)		
6. TEST REQUIREMENTS MSFC: 7921601 0.3.2.4.2.1 THRU 0.3.2.4.2.3.1.4 0.3.2.4.2.5		
D	3-4-74	REVISED MSFC REQUIREMENTS
C	3-23-74	REVISE MSFC REQUIREMENTS
B	3-3-74	CHANGE EFFECTIVITY TO STANDBY
A	2-24-74	CHANGE EFFECTIVITY TO STANDBY
7. DATE	8. REASON	9. DATE
3/1/74	IBM 967	25 SEPTEMBER 1967
3/1/74	LV-INS-11	10/17/67

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE C-BAND TRANSPONDER BENCH TEST (STANDBY)		2. KSC TEST NUMBER V-28054
3. LOCATION VAB, 26E7/26B7		4. COMPUTER PROC. IDENTIFICATION N/A
5. SUPPORT REQUIREMENTS RD 41460 INTERSTAGE: N/A OFF-COMPLEX: FREQUENCY CLEARANCE FOR 5690 & 5765 MHZ. ON-COMPLEX: QAI		6. EST. TEST TIME 1 MAN - 4 HOURS
7. OTHER APPLICABLE REFERENCE DOCUMENTATION C-BAND RADAR TRANSPONDER SET SST-135C, (66-966-0020)		
8. ITEM CONTINUATION BLOCK 5 CONT.  TEST EQUIPMENT: C-BAND BREAKOUT BOX, 67-967-001 C-BAND RF CHECKOUT STATION #1 ROOM 26E7: P/N 63E900373G1, S/N 1 P/N 63E900374G1, S/N 1 P/N 63E900375G1, S/N 1  C-BAND RF CHECKOUT STATION #2, ROOM 26B7. (ALTERNATE) P/N 63E900376G1, S/N 1 P/N 63E900377G1, S/N 1 P/N 63E900378G1, S/N 1  CONFIGURATION: TEST TO BE PERFORMED IN EITHER ROOM 26B7 OR 26E7 TEST PROCEDURE V-28053 MUST BE COMPLETE PRIOR TO START OF THIS TEST; C-BAND TRANSPONDER WILL BE ATTACHED TO HEAT SINK DURING OPERATION.		



KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE IU RADAR CLOSED LOOP TEST		2. KSC TEST NUMBER V-28055	
3. EFFECTIVITY 206 & SUBS 503 & SUBS			
4. TEST OBJECTIVES TO VERIFY COMPATIBILITY OF THE RADAR TRANSPONDER WITH THE AIRBORNE IU SYSTEMS AND ESTABLISH FLIGHT READINESS OF THE RADAR AIRBORNE SYSTEM.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. TEST EQUIPMENT: LAUNCH COMPLEX 39 RF TRANSMISSION LINKS, DRAWING NO. 203-434. RF CHECKOUT STATION #1, RM. 26E7, COMPOSED OF: P/N 63E900373G1, S/N 1 P/N 63E900374G1, S/N 1 P/N 63E900375G1, S/N 1 RF CHECKOUT STATION #2, RM. 26B7, COMPOSED OF THE FOLLOWING: P/N 63E900376G1, S/N 1 P/N 63E900377G1, S/N 1 P/N 63E900378G1, S/N 1 DESCRIPTION: AFTER POWER IS APPLIED AND THE PROPER WARMUP TIME OBSERVED, SIGNALS WILL BE SENT BETWEEN THE RADAR TRANSPONDER IN THE IU AND THE RADAR TEST SET IN THE RF LAB. POWER OUTPUT WILL BE MEASURED BY THE USE OF AN RF POWER METER. RECEIVER SENSITIVITY WILL BE MEASURED BY DECREASING THE SIGNAL LEVEL INPUT TO THE TRANSPONDER UNTIL COUNTDOWN OCCURS. RECEIVER AND TRANSMITTER CENTER FREQUENCIES AND RECEIVER BANDWIDTH WILL BE MEASURED WITH THE USE OF A FREQUENCY COUNTER. RECOVERY TIME WILL BE MEASURED BY INTRODUCING A SECOND PAIR OF INTERROGATION PULSES AND MEASURING HOW CLOSE THE TWO GROUPS OF PULSES CAN BE AND THE TRANSPONDER STILL REPLY TO BOTH GROUPS. PULSE SHAPES, DELAY TIME AND PULSE CODE SPACING WILL BE MEASURED BY OBSERVING THE DETECTED PULSE OUTPUTS ON AN OSCILLOSCOPE. ALL TELEMETRY OUTPUTS FROM THE RADAR TRANSPONDER WILL BE CHECKED AND CALIBRATED. THE INHIBIT CIRCUIT WILL BE TESTED BY ATTEMPTING TO INTERROGATE THE TRANSPONDERS AND MONITORING FOR REPLYS WITH THE INHIBIT APPLIED. ANY RANDOM TRIGGERING WILL BE OBSERVED AND RECORDED. CONFIGURATION: IU LOCATED IN VAB IN ERECTED POSITION; IU COOLING AND POWER ON; RF CLEARANCE FOR CLOSED LOOP OPERATION. 5690 & 5765 MHZ; ANTENNA COUPLER AND TRANSMISSION SYSTEM CONNECTED TO IU RADAR ANTENNA; TEST PROCEDURES V-28053 AND V-28059 (S-V) OR V-28227 AND V-28228 (SL-2) MUST BE COMPLETE PRIOR TO START OF THIS TEST. (CONT-18)			
SEE BLOCK 18 FOR REVISION HISTORY			
6. REV.	DATE	REASON	Contractor Approval
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE	KSC Approval
S/ R. H. GOULD	IBM - 967	19 SEPTEMBER 1967	
10. KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE	
S/ J. S. BIZZELL	LV-INS-11	26 SEPTEMBER 1967	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE IU RADAR CLOSED LOOP TEST		2. KSC TEST NUMBER V-28055	
3. EFFECTIVITY 206 & SUBS 503 & SUBS			
13. LOCATION VAB 26E7/26B7	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 1 MAN - 4 HOURS	
16. SUPPORT REQUIREMENTS RD 41460 INTERSTAGE: N/A OFF-COMPLEX: FREQUENCY CLEARANCE FOR 5690 & 5765 MHZ ON-COMPLEX: GROUND POWER, IU POWER, FACILITY COMMUNICATIONS (OIS), DOAS, RCA 110A, IBM MEASURING, QUALITY INSPECTOR			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION IBM DOCUMENT #66-966-008, C-BAND RADAR TRANSPONDER SET SST-135C			
18. ITEM CONTINUATION PHASE: III		TEST REQUIREMENTS MSFC: 7921601 0.3.2.4.2.3.1.4 0.3.2.4.2.5 0.3.2.4.2.1.1.1 0.3.2.4.2.1.1.2 0.3.2.4.2.1.1.3 0.3.2.4.2.1.1.4 0.3.2.4.2.2.1.1 0.3.2.4.2.2.1.2 0.3.2.4.2.2.1.3 0.3.2.4.2.2.1.4 0.3.2.4.2.2.1.5 0.3.2.4.2.2.1.6 0.3.2.4.2.3.1.1 0.3.2.4.2.3.1.2 0.3.2.4.2.3.1.3	
REVISION HISTORY			
A	5/23/69	REVISE MSFC REQ'MTS	S/R. GOULD S/J. BIZZELL
B	1/12/70	REVISE BLOCK 16	S/R. GOULD S/J. BIZZELL
C	11/23/70	REVISE MSFC REQ'MTS	S/J. WASHBURN S/J. BIZZELL
D	5/9/72	UPDATE FOR SL-2 EFFECTIVITY	S/J. WASHBURN S/J. BIZZELL
E	9/6/74	REVISED MSFC REQUIREMENTS	S/J. WASHBURN S/J. BIZZELL
REV.	DATE	REASON	CONTR. APPV'L KSC APPV'L



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 3
1. TEST TITLE <b>IU RADAR OPEN LOOP TEST</b>		2. KSC TEST NUMBER V-28056 3. EFFECTIVITY 206 & SUB 512 & 514
4. TEST OBJECTIVES		
1. VERIFY COMPATIBILITY OF THE AIRBORNE RADAR SYSTEM WITH THE EASTERN TEST RANGE RADAR INTERROGATION SYSTEMS. 2. VERIFY THE ABILITY OF THE GSE IN THE VAL TO INTERROGATE AND MONITOR THE IU RADAR.		
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION		
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
TEST EQUIPMENT		
1. LAUNCH COMPLEX 39 RF TRANSMISSION LINKS, DWG. NO. 203-434. 2. RF CHECKOUT STATION NO. 1, RM. 26E7, COMPOSED OF THE FOLLOWING: P/N 63C511294. 3. RF CHECKOUT STATION NO. 2, RM. 26B7, COMPOSED OF THE FOLLOWING, MAY BE USED AS AN ALTERNATE: P/N 63C511294.		
DESCRIPTION:		
1. THE TRANSPONDER IS CONNECTED IN THE OPEN LOOP CONFIGURATION. POWER IS APPLIED AND THE FOLLOWING PARAMETERS ARE MEASURED BY THE ETR RADARS: RECEIVER & TRANSMITTER CENTER FREQ. BEACON DELAY PULSE WIDTH PRF BALANCE SIGNAL STRENGTH JITTER COUNTDOWN RECOVERY TIME INHIBIT PULSE SPACING (CODING)		
2. THE TRANSPONDER WILL BE OPERATED IN THE OPEN LOOP CONFIGURATION RADIATING THRU THE MSS PASSIVE REPEATER SYSTEM. THE RADAR GSE LOCATED IN ROOM 26E7 OR 26B7 WILL BE USED TO INTERROGATE THE TRANSPONDERS AND VERIFY PROPER OPERATION. THE FOLLOWING PARAMETERS WILL BE CHECKED: PULSE SPACING, RECEIVER AND TRANSMITTER CENTER FREQUENCY, PULSE CHARACTERISTICS, PULSE DELAY, BEACON RECEIVER SENSITIVITY AND TRANSMITTER POWER, AND INHIBIT.		
PHASE: III, VB, VI		TEST REQUIREMENTS SEE BLOCK 18
(CONTINUED IN BLOCK 18)		
SEE CONTINUATION SHEET FOR REVISION HISTORY		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
S/ R. H. GOULD	IBM - 967	OCTOBER 10, 1969
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
S/ J. BIZZELL	LV-INS-11	OCTOBER 18, 1969

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 3
1. TEST TITLE <b>IU RADAR OPEN LOOP TEST</b>		2. KSC TEST NUMBER V-28056 3. EFFECTIVITY 206 & SUB 512 & 514
13. LOCATION VAB 26E7/26B7	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 2 MEN. - 4 HOURS
16. SUPPORT REQUIREMENTS		
RD 41460		
INTERSTAGE: N/A		
OFF-COMPLEX: RANGE RADAR READOUT, FREQUENCY CLEARANCE FOR 5690 AND 5765 MHZ OPEN LOOP.		
ON-COMPLEX: GROUND POWER, IU POWER, FACILITY OIS, DDAS, RCA 110A, IBM MEASURING AND IBM QUALITY INSPECTOR.		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
C-BAND RADAR TRANSPONDER SET SST-135C, IBM DOCUMENT NO. 66-966-0008		
18. ITEM CONTINUATION		
(CONTINUED FROM BLOCK 5)		
CONFIGURATION		
VEHICLE LOCATED ON MOBILE LAUNCHER AT PAD 39A OR 39B, WITH MSS IN PLACE; IU COOLING AND POWER ON; ANTENNA COUPLER AND MSS ANTENNA SYSTEM CONNECTED TO IU RADAR ANTENNA; TEST PROCEDURES V-28053, V-28059 AND V-28055 COMPLETE/V-28226, V-28055 AND V-28227 COMPLETE.		
TEST REQUIREMENTS SAT 18		
MSFC: 7921601		
0.3.2.4.2 0.3.2.4.2.3 0.3.2.4.2.1 0.3.2.4.2.3.1 0.3.2.4.2.1.1 0.3.2.4.2.3.1.1 0.3.2.4.2.1.1.1 0.3.2.4.2.3.1.3 0.3.2.4.2.1.1.2 0.3.2.4.2.3.1.4 0.3.2.4.2.1.1.3 0.3.2.4.2.4 0.3.2.4.2.1.1.4 0.3.2.4.2.4.1 0.3.2.4.2.2 0.3.2.4.2.5 0.3.2.4.2.2.1 0.3.2.4.2.3.1.2 0.3.2.4.2.2.1.1 0.3.2.4.2.2.1.2 0.3.2.4.2.2.1.3 0.3.2.4.2.2.1.4 0.3.2.4.2.2.1.5 0.3.2.4.2.2.1.6		



N-3C FORM 23-320A 7 971



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE 10 RF SYSTEM SUPPORT		2. KSC TEST NUMBER V-28069	
3. EFFECTIVITY 503 & SUBS			
4. TEST OBJECTIVES  ESTABLISH A PROCEDURE FOR VERIFYING AIRBORNE HARDWARE OPERATION WHEN REQUIRED TO SUPPORT OTHER LAUNCH VEHICLE TESTING.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  TEST EQUIPMENT: COMMAND COMMUNICATIONS SYSTEM TEST SET P/N 01-26719H02 S/N2 OR S/N5  C-BAND RF CHECKOUT STATION RACKS 10, 11, 12 RM 26E7. P/N 63E900 373G1 S/N1 P/N 63E900 374G1 S/N1 P/N 63E900 375G1 S/N1  C-BAND RF CHECKOUT STATION RACKS 13, 14, 15. P/N 63E900 376G1 S/N1 P/N 63E900 377G1 S/N1 P/N 63E900 378G1 S/N1  COMMAND SIMULATOR P/N 511091G4 - S/N 012 OR S/N 014 LAUNCH COMPLEX 39 RF TRANSMISSION LINKS DRAWING #203-434.  DESCRIPTION: A SET OF INSTRUCTIONS FOR GROUND SUPPORT EQUIP. SET-UP AND QUICK LOOK EVALUATION OF THE OPERATION OF CCS, & C-BAND AIRBORNE EQUIPMENT IS PROVIDED. C-BAND AIRBORNE EQUIPMENT IS TESTED EITHER BY THE GSE OR ETR OR COMBINATION OF BOTH AS REQUIRED BY THE INTEGRATED TCP. CCS AIRBORNE EQUIPMENT IS TESTED EITHER BY THE GSE OR USB STATION OR COMBINATION OF BOTH AS REQUIRED BY THE INTEGRATED TCP.  PHASE: III, IV, VA, VB, VI (CONTINUED IN BLOCK 18)			
6. REVISIONS B 11/23/70 REVISE MSFC REQUIREMENTS A 5/23/69 REVISE MSFC REQUIREMENTS			
7. CONTRACTOR APPROVAL S/ W. A. SULLINS		8. ORGANIZATION IBM - 967	
9. DATE 22 NOVEMBER 1967		10. NASA-KSC APPROVAL S/ J. BIZZELL	
11. ORGANIZATION LV-INS-11		12. APPROVAL DATE 11-29-67	

KSC FORM 20-338 (7/67)

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE 10 RF SYSTEM SUPPORT		2. KSC TEST NUMBER V-28069	
3. EFFECTIVITY 503 & SUBS			
13. LOCATION SEE BLOCK 18	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME	
16. SUPPORT REQUIREMENTS  FD 41460  INTERSTAGE REQUIREMENTS:  OFF-COMPLEX: RF CLEARANCE FOR 2101, 2282, 5690, 5765 MHZ ETO READOUT OF C-BAND BEACONS. USB READOUT OF CCS.  ON-COMPLEX: IU POWER AND COOLING, IBM QUALITY INSPECTOR. OIS, DDAS, IU TELEMETRY, IU MEASURING.			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION TECHNICAL MANUALS FOR: COMMAND DECODER, IBM 66-699-0019; CCS P.A., IBM 67-699-0002; CCS TRANSPONDER, 67-699-0003; C-BAND 66-966-0020.			
18. ITEM CONTINUATION (CONTINUED) BLOCK 5  DESCRIPTION: THE TEST MAY BE IN THE VAB OR AT PAD A OR B.  CONFIGURATION: COMMAND AND COMMUNICATIONS SYSTEM, C-BAND SYSTEM, BOTH GSE AND AIRBORNE CONNECTED AS REQUIRED TO SUPPORT INTEGRATED TEST.  <div style="text-align: right;">TEST REQUIREMENTS MSFC: 7916404 (504 &amp; SUBS) 0.3.2.4.1 0.3.2.4.2.5</div>  BLOCK 13  LOCATION: VAB, 26E7, 26B7, PAD A OR PAD B.			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE TM MOBILE LAUNCHER GSE READINESS TEST		2. KSC TEST NUMBER V-28070	
3. EFFECTIVITY		4. EFFECTIVITY	
4. TEST OBJECTIVES To verify readiness of the Mobile Launcher Telemetry, RF, and DDAS closed loop coaxial cables; and verify patching and proper operation of the attenuator and passive combiner.			
5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  Mobile Launcher DDAS cables for each stage will be tested for continuity and attenuation, and tested by time domain reflectometer.  Closed loop TM/RF cables for each stage will be tested for continuity, attenuation, and VSWR, and also by time domain reflectometer.  The attenuator and passive combiner will be tested for insertion loss and proper operation.  DDAS cables between the Firing Room and the TCE and lines from the TCE to the Retransmission Room (2P12) will be tested by Time Domain Reflectometer.  An end-to-end calibration of the DDAS cable and associated line driver will be performed for each stage. Line driver calibration curves may be generated from this data.			
6. DATE 8-4-74		7. REASON Procedure revision for ASTP to incorporate changes in TOR testing	
8. ORGANIZATION s/Steven H. Dodge		9. DATE 4-4-74 Steven Dodge	
10. NASA/KSC APPROVAL s/L. C. Stanchard		11. ORGANIZATION LV-INS-12	
		12. APPROVAL DATE 4-10-72	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE TM MOBILE LAUNCHER GSE READINESS TEST		2. KSC TEST NUMBER V-28070	
3. EFFECTIVITY		4. EFFECTIVITY GSE	
13. LOCATION		14. COMPUTER PROC. IDENTIFICATION	
		15. EST. TEST TIME 80 manhours	
16. SUPPORT REQUIREMENTS Telemetry Checkout Equipment ESE DDAS Facility Power 400 KHZ Ground Power Stage Contractor QC Boeing Networks OIS Communications			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE Telemetry Checkout Equipment Mechanical Maintenance Test		2. KSC TEST NUMBER V-28150	
		3. EFFECTIVITY GSE	
4. TEST OBJECTIVES To provide preventive maintenance and cleaning of the Telemetry Checkout Equipment and associated auxillary equipment; provide for removal and reinstallation of the LCC roof antennas in accordance with the KSC Hurricane Plan.			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. The following steps will be accomplished:  Clean all racks and filters to remove dust, dirt, or lint. Remove equipment filters, clean, dry, and reinstall. Lubricate all fans, blowers, and motors requiring periodic lubrication. Visually check the physical condition of all equipment and connectors.			
<div style="font-size: 48pt; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>			
6. REV	DATE	REASON	
C	9/6/74	Cancel	
7. CONTRACTOR APPROVAL s/Steven H. Dodge		8. ORGANIZATION LV-INS-12	
9. DATE 9-4-74		10. NASA/FSC APPROVAL s/L. C. Blanchard	
		11. ORGANIZATION LV-INS-12	
		12. APPROVAL DATE 2-29-72	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE Telemetry Checkout Equipment Mechanical Maintenance Test		2. KSC TEST NUMBER V-28150	
		3. EFFECTIVITY GSE	
13. LOCATION LCC	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME 40 manhours	
16. SUPPORT REQUIREMENTS LCC Telemetry Checkout Equipment			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			

CANCELLED



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
DDAS PREVENTATIVE MAINTENANCE		2 KSC TEST NUMBER V-28152
		3 EFFECTIVITY GSE 39 A,B,C
7 TEST OBJECTIVES TO PROVIDE INSTRUCTIONS FOR PERFORMANCE OF PREVENTATIVE MAINTENANCE ON THE DDAS SYSTEM.		
8 CONTAINMENT OF EQUIPMENT STATUS CONFIGURATION THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
THIS PROCEDURE CONTAINS INSTRUCTIONS FOR PERIODIC CLEANING, PHYSICAL INSPECTION, ELECTRICAL CHECKOUT, AND ADJUSTMENT NECESSARY TO INSURE RELIABLE OPERATION OF THE DDAS SYSTEM. THE PROCEDURE IS DIVIDED INTO THREE SECTIONS, WHICH MAY BE CONDUCTED ON A PERIODIC OR ELAPSE TIME BASIS. AN APPENDIX SECTION IS FOR SPECIAL CLEANING AND MECHANICAL PIN PUSH CHECKS.  1. MONTHLY/400 HR. 2. QUARTERLY/1200 HR. 3. SEMI-ANNUALLY/2400 HR.		
PAGE: 1A		TEST REQUIREMENTS MSFC: NONE
REVISIONS		APPROVALS
1. 1-1-77 REVISED BLOCK 16		2. 1-1-77 REVISED BLOCKS 4-6-15
DATE	REASON	3. DATE
1-1-77	IBM 908	1-1-77
DATE	4. ORGANIZATION	12. APPROVAL DATE
1-1-77	210-115-18	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)	
1. TEST TITLE DDAS PREVENTATIVE MAINTENANCE	2. TEST NUMBER V-28152
3. DATE LC-39	4. COMPLETION DATE 1-1-77
5. SUPPORT REQUIREMENTS 1. INTERSTAGE REQUIREMENTS: NONE 2. OFF COMPLEX SUPPORT: NONE 3. ON COMPLEX SUPPORT: A. GROUND POWER B. DDAS C. RCA 110-A D. CSO-CLEAN FILTERS E. IBM QAI	
6. OTHER APPLICABLE REFERENCE DOCUMENTATION V-28185-GSE THROUGH V-28002 - GSE INCLUSIVE VENDORS MANUAL, VR3600 MAGNETIC TAPE RECORDER.	
7. ITEM CONTINUATION	

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE G124 TELEMETRY CHECKOUT EQUIPMENT PRE-EMPHASIS TOLERANCE TEST	2. KSC TEST NUMBER V-28182	3. EFFECTIVITY GSE/506 & subs
4. TEST OBJECTIVES		
<ol style="list-style-type: none"> <li>To establish FM channel pre-emphasis meter tolerance.</li> <li>To establish/verify TMI pre-emphasis curve.</li> <li>To establish BPIF output voltage tolerances (RMS).</li> <li>To establish pre-emphasis DC voltage tolerances.</li> </ol>		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION		
<p>THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>The RF Signal Generator is adjusted to the FM/FM RCVR frequency and fed to the RCVR input. The RCVR video output is fed to the discriminators. The five-point calibrator is used to deviate the RF Signal Generator at each IRIG frequency for Channels 5 thru 18. Each channel is deviated at the standard pre-emphasis level and at <math>\pm 15\%</math> of standard pre-emphasis level.</p> <p>The FM channel pre-emphasis meter readings, BPIF output voltage (RMS) readings, and pre-emphasis DC voltage reading for each channel at each deviation level are recorded for future reference. The TMI pre-emphasis curve is established or verified to be correct.</p> <p>This test will be performed as required prior to checking or troubleshooting the S-II A/B FM/FM telemeter system.</p> <p>FM/FM TCE in System Configuration.</p> <p style="text-align: center;"><u>Test Requirements</u></p> <p style="text-align: center;">MSFC: Not Applicable</p>		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL <i>R. M. Kelly</i> 1-16-69	8. ORGANIZATION <i>North American Rockwell</i>	9. DATE 1-17-69
10. NASA-KSC APPROVAL <i>L. Blanchard</i> SD	11. ORGANIZATION LV-INS-12	12. APPROVAL DATE 1-17-69

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE G124 TELEMETRY CHECKOUT EQUIPMENT PRE-EMPHASIS TOLERANCE TEST		2. KSC TEST NUMBER V-28182
3. EFFECTIVITY GSE 506 & Subs		4. EST. TEST TIME 1.5 Hours
13. LOCATION TCE, LCC, 2P10A	14. COMPUTER PROC. IDENTIFICATION N/A	
15. SUPPORT REQUIREMENTS		
LCC TM Sta. (Monitor)		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE Telemetry Checkout Equipment Data Reduction Procedure		2. KSC TEST NUMBER V-28184
		3. EFFECTIVITY GSE
4. TEST OBJECTIVES To verify that the Telemetry Checkout Equipment is in the correct configuration for data reduction from magnetic tapes.		
5. TEST DESCRIPTION: EQUIPMENT STATUS/CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  Prime test organization is Ground Instrumentation.  This procedure will use Stage Module and Common Module equipment. Required portions will be conducted prior to each playback. The portion or portions of this procedure to be used will depend upon the type of data reduction being performed. This procedure will describe the following: <ol style="list-style-type: none"> <li>1. Equipment setup for FM data reduction</li> <li>2. Equipment setup for PCM data reduction</li> <li>3. PCM-CIF Tape Playback</li> <li>4. PCM-Digital Bit Stripout</li> <li>5. Equipment setup for special PCM data reduction.</li> <li>6. Equipment setup for SSB data reduction.</li> <li>7. PCM patching configurations</li> <li>8. Tape Dubbing.</li> <li>9. Timing &amp; Voice verification</li> <li>10. Data annotation and disposition.</li> <li>11. DLAS serial train recording.</li> <li>12. Calibrations; Pen Recorder and Oscilloscope</li> <li>13. TCE Data coordination sheets</li> <li>14. Data Switch Patching</li> </ol>		
TEST REQUIREMENTS: N/A		
<div style="text-align: center; font-size: 2em; opacity: 0.5;">CANCELLED</div>		
6. REV. DATE 9/5/74	7. CANCELLATION APPROVAL Cancel	
8. REV. DATE 9/5/74	9. DATE 9-9-74	10. DATE 9-9-74
11. ORGANIZATION S/A. Smith/L. Gantt	12. ORGANIZATION 5-8511/5-8542	13. DATE 7-3-69
14. DATA KSC APPROVAL S/L. C. Planchard	15. ORGANIZATION LV-INS-12	16. DATE 7-3-69

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE TELEMETRY CHECKOUT EQUIPMENT DATA REDUCTION PROCEDURE		2. KSC TEST NUMBER V-28184
		3. EFFECTIVITY GSE
13. LOCATION LCC	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME
16. SUPPORT REQUIREMENTS  LCC Telemetry Checkout Equipment (TCE) LCC TCE Magnetic Tape Recording.		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  V-28009 Telemetry Checkout Equipment Daily Readiness Test		
18. ITEM CONTINUATION		

CANCELLED

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 2
SATURN IB ANTENNA SYSTEM AND RF CABLE CHECKOUT		V 28202 206 and Subs
<p>MEASURE OPERATING PARAMETERS OF SIB ANTENNA SYSTEMS AND RF CABLES. THE OPERATING PARAMETERS MEASURED ARE:</p> <p>ANTENNA VSWR ANTENNA FEED SYSTEM ATTENUATION (POWER DIVIDER, DIRECTIONAL COUPLER AND RF CABLES) ANTENNA SYSTEM VISUAL CHECK</p>		
<p>THIS TEST DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <ol style="list-style-type: none"> <li>1. Antenna VSWR is measured by applying a signal at the operating frequency and modulated by 1 KHZ. A circular slotted line and VSWR indicator are used to obtain VSWR measurements. The operational frequency is verified with a Digital Frequency Counter.</li> <li>2. The attenuation of the RF cables, power divider and directional coupler is measured by applying a C.W. signal at the operating frequency. Calibrated power meters are used to measure power loss. The operating frequency is verified with a Digital Frequency Meter.</li> <li>3. The Antenna Subsystem (4 ea) are visually checked for physical damage. The vehicle shall be erected and the area around the antennas cleared of non-essential personnel.</li> </ol>		
<p><b>TEST REQUIREMENTS</b></p> <p>MSFC.</p> <ol style="list-style-type: none"> <li>1) 3.7.2.1.1</li> <li>2) 3.7.2.1.2</li> <li>3) 3.7.2.1.3</li> <li>4) 3.7.2.1.4</li> <li>5) 3.7.2.2</li> <li>6) 3.7.1.3</li> </ol>		
<p>A 6-9-72 Add Test Requirement 3.7.1.3 Visual Check of Antenna Subsystem</p>		
REASON	APPROVAL	DATE
CCSD		11/25/71
ORGANIZATION	APPROVAL DATE	
LV-INS-11		11-25-71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 2
SATURN IB ANTENNA SYSTEM AND RF CABLE CHECKOUT		V 28202 206 and Subs
LC-39	N/A	16 Hours
<ol style="list-style-type: none"> <li>1. RANGE FREQUENCY CLEARANCE IS REQUIRED FOR 450 MHZ.</li> <li>2. CCSD QC</li> <li>3. C3TC</li> </ol>		
<p>1. "Test and Checkout Specifications and Criteria at KSC."</p> <p>2. Saturn Antenna Manual</p>		
ITEM CONTINUATION		



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 2
SIB DIGITAL RANGE SAFETY COMMAND (DRSC) DECODER BENCH TEST (SPARE)		V-28203 206 & Subs LC-39
TO VERIFY THE OPERATIONAL STATUS OF THE SPARE DRSC DECODER		
<p>THE TEST DOES <input checked="" type="checkbox"/> NOT CONTAIN HAZARDOUS OPERATIONS</p> <p>The decoder is connected to the DRSC GSE and power is applied to the decoder. The following parameters are checked: power consumption, functional performance and sensitivity. The decoder logic circuits are verified by sending the Safe Command from the DRSC GSE and observing the Safe indications on the GSE indicator panel. This is performed with three (3) test codes to verify operation of all twenty-one gates, audio input sensitivity, high voltage and low voltage tests. Negative spikes on the output pulse are verified to be not greater than 3.0 volts amplitude.</p> <p style="text-align: right;"><b>TEST REQUIREMENTS</b> MSFC: 3.0.0.1.2.10.1.1 3.0.0.1.2.10.1.2 3.0.0.1.2.10.2 3.0.0.1.2.10.3 3.0.0.1.2.10.4 3.0.0.1.2.10.5 3.0.0.1.2.10.5.1 3.0.0.1.2.10.5.2 3.7.2.22</p> <p>N/A</p>		
B 6-5-74 To reflect ET-66041 to 60C06050		M. G. W. 11/23/71
A 5-10-73 To reflect ET-66009R2 to 60C06050		M. G. W. 11/23/71
REASON		Contractor Approval: KSC Approval
10. ORGANIZATION CCSD		DATE 11/23/71
11. ORGANIZATION LV-INS-11		APPROVAL DATE 11-29-71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
TEST TITLE SIB DIGITAL RANGE SAFETY COMMAND (DRSC) DECODER BENCH TEST (SPARE)		V-28203 206 & Subs LC-39
LOCATION LC-39	COMPUTER PROGRAM IDENTIFICATION N/A	TEST TEST TIME 8 Hours
<p>DRSC GSE (LCC ROOM 2P10) CCSD QC</p>		
<p>OTHER APPLICABLE REFERENCE DOCUMENTATION</p> <ol style="list-style-type: none"> <li>Test Specifications &amp; Criteria at KSC</li> <li>AVCO Instruction Manual - Decoder</li> </ol>		
ITEM CONTINUATION		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
SIB DIGITAL RANGE SAFETY COMMAND (DRSC) RECEIVER BENCH TEST (SPARE)		V-28204 206 & Subs LC-39	
<p>TO VERIFY THE OPERATIONAL STATUS OF THE SPARE DRSC RECEIVER.</p>			
<p>EQUIPMENT STATUS CONFIGURATION</p> <p>DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>The receiver is connected to the DRSC GSE and power is applied. The following parameters are checked: 3 DB bandwidth, 60 DB bandwidth, center frequency, monitor monitor voltage, quieting, audio frequency response, and image frequency rejection, power input, audio output, audio bandwidth and deviation sensitivity.</p> <p>Vehicle Configuration - N/A</p>			
<p><b>TEST REQUIREMENTS</b></p> <p>KSC 3.0.0.1.2.9.1 3.0.0.1.2.9.2 3.0.0.1.2.9.3 3.0.0.1.2.9.4 3.0.0.1.2.9.5 3.0.0.1.2.9.6 3.0.0.1.2.9.7 3.0.0.1.2.9.8 3.0.0.1.2.9.9 3.0.0.1.2.9.10</p>			
N/A			
A 5-10-73 To Reflect ET-66009R2 to 60C06050		<p>Contractor Approval: <i>[Signature]</i> Date: <i>10/11/73</i></p> <p>KSC Approval: <i>[Signature]</i> Date: <i>10/11/73</i></p>	
<p>7. APPROVAL DATE</p> <p>8. ORGANIZATION</p> <p>CCSD</p>		<p>9. DATE</p> <p>10. APPROVAL DATE</p> <p>12-3-77</p>	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
SIB DIGITAL RANGE SAFETY COMMAND (DRSC) RECEIVER BENCH TEST (SPARE)		V-28204 206 & Subs LC-39	
LC-39		N/A	
8 Hours			
<p>Range Clearance - 450 MHz</p> <p>DRSC GSE (LCC Room 2P10)</p> <p>CCSD QC</p>			
<p>1. Test specifications &amp; criteria at KSC</p> <p>2. Motorola Instruction Manual - Receiver Mod MCR 503</p>			
<p>13. TEM CONTINUATION</p>			

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 of 2									
DIGITAL RANGE SAFETY COMMAND (DRSC) SYSTEMS TEST - CLOSED LOOP (VAB)		V-28205 206 & Subs LC-39									
<p>To insure Flight Readiness of the Digital Range Safety Command System. System parameters verified are:</p> <table border="0"> <tr> <td>Receiver Bandwidth</td> <td>System Command Verification</td> </tr> <tr> <td>Image Rejection</td> <td>System RF Threshold Level</td> </tr> <tr> <td>Receiver Quieting</td> <td>System Deviation Threshold Level</td> </tr> <tr> <td>Decoder Logic Verification</td> <td>Receiver Limiter Monitor Voltage</td> </tr> </table>				Receiver Bandwidth	System Command Verification	Image Rejection	System RF Threshold Level	Receiver Quieting	System Deviation Threshold Level	Decoder Logic Verification	Receiver Limiter Monitor Voltage
Receiver Bandwidth	System Command Verification										
Image Rejection	System RF Threshold Level										
Receiver Quieting	System Deviation Threshold Level										
Decoder Logic Verification	Receiver Limiter Monitor Voltage										
<p>THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>All Vehicle command antennas and closed loop cables are connected to the receivers.</p> <p>Calibrated closed loop cables are connected between the vehicle DRSC system and the DRSC GSE in the LCC, Room 2P10. An unmodulated RF signal is transmitted from the DRSC GSE to the Vehicle DRSC receivers to ascertain the following operating parameters:</p> <p>Receiver 3 DB Bandwidth, 60 DB Bandwidth, corrected center frequency, quieting, limiter monitor voltage and image frequency rejection. An RF signal is then frequency modulated with various audio signals and the frequency response of the receiver is obtained. System dynamic bandwidth is checked.</p> <p>The Vehicle DRSC Systems are exercised by modulating the RF signal with various commands. Saturn IB VMGSE recordings of the DRSC measurements are analyzed to determine the functional performance of the systems.</p> <p>Decoder logic circuits are verified by modulating the carrier with cutoff commands from the GSE encoder, and verifying output at TCE. This is performed with 3 test codes to verify all 21 gates. Negative spikes on the output pulse are verified to be not greater than 3.0 volts amplitude.</p> <p>Vehicle Erected - Umbilicals Connected.</p>											
<p align="center"><b>TEST REQUIREMENTS</b> (See Item 18, Page 2)</p>											
A 8-5-74 To reflect ET-66041 to 60C06050		<p><i>[Signature]</i> 11/1/74 Contractor Approval</p> <p><i>[Signature]</i> 11/1/74 KSC Approval</p>									
<p>10 CONTRACTOR APPROVAL <i>[Signature]</i></p>		<p>9. DATE 11/1/74</p>									
<p>11 ORGANIZATION CCSD</p>		<p>12 APPROVAL DATE 12-3-71</p>									
<p>13 ORGANIZATION LV-INS-11</p>											

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET 21		PAGE 2 of 2	
DIGITAL RANGE SAFETY COMMAND (DRSC) SYSTEMS TEST - CLOSED LOOP (VAB)		V-28205	
LC-39		206 & Subs LC-39	
N/A		16 Hours	
<p>1. SIB Stage Power</p> <p>2. DDAS</p> <p>3. SIB Vehicle Measuring GSE</p> <p>4. DRSC GSE (LCC, Room 2P10)</p> <p>5. Range Frequency Clearance for 450, 241, and 471 MHZ.</p> <p>6. LCC TCE (LCC, Room 2P10)</p> <p>7. CCSD QC</p> <p>8. C3TC</p>			
<p>OTHER APPLICABLE REFERENCE DOCUMENTATION</p> <p>1. Test &amp; Checkout Specifications &amp; Criteria at KSC</p> <p>2. AVCO Instruction Manual - Decoder</p> <p>3. Motorola Instruction Manual - Rec. Model MCR 503</p>			
<p>ITEM CONTINUATION</p> <p><b>ITEM 5(Continued)</b></p> <p><b>TEST REQUIREMENTS - MSFC</b></p> <ol style="list-style-type: none"> <li>3.7.2.4</li> <li>3.7.2.5</li> <li>3.7.2.6</li> <li>3.7.2.8.1</li> <li>3.7.2.8.2</li> <li>3.7.2.9.1</li> <li>3.7.2.9.2</li> <li>3.7.2.10</li> <li>3.7.2.11</li> <li>3.7.2.17.1</li> <li>3.7.2.17.2</li> <li>3.7.2.17.3</li> <li>3.7.2.17.4</li> <li>3.7.2.18</li> <li>3.7.2.19</li> <li>3.7.2.22</li> </ol>			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE TELEMETRY, FM/FM SYSTEM FUNCTIONAL TEST (SPARE)		2. KSC TEST NUMBER V-28217	
		3. EFFECTIVITY 206 & Subs LC-39	
4. TEST OBJECTIVES The objective of this test is to verify the performance of the spare FM/FM telemeter system. This is accomplished by measuring the SCO deviation of the RF carrier, SCO center frequencies and bandedge frequencies, confirming that preflight/inflight calibrations are received, and by measuring RF assembly power output and transmitter center frequency. Proper calibration sequence of the TM calibrator is verified.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  The Telemeter System is connected to the TM checkout rack and the TCE stage module. The TCE RF signal generator is modulated at the SCO frequencies conforming to the FM/FM carrier deviation schedule and discriminator reference levels are recorded. Power is applied to the telemeter. Preflight calibration level of 50% is selected and the FM/FM carrier deviation schedule is compared to the recorded discriminator reference levels. Center frequencies of the SCO's are verified at the preflight calibration level of 50%. Preflight levels of 0% and 100% are selected, and the SCO's are checked for bandedge frequencies. The RF transmitter power output and center frequency are measured and verified to be within tolerable limits. The telemeter is checked for reception of preflight calibration and inflight calibration assignment.  FM/FM System (Spare) is verified in a Laboratory Test.  <div style="text-align: right;"><b>TEST REQUIREMENTS:</b> MSFC - N/A KSC - N/A</div>			
6. REV. DATE		REASON	
7. CONTRACTOR APPROVAL <i>[Signature]</i>		8. ORGANIZATION CCSD	
9. DATE 12-6-71		10. CONTRACTOR APPROVAL <i>[Signature]</i>	
11. DATE 12-15-71		12. ORGANIZATION LV-INS-12	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE TELEMETRY, FM/FM SYSTEM FUNCTIONAL TEST (SPARE)		2. KSC TEST NUMBER V-28217	
		3. EFFECTIVITY 206 & Subs LC-39	
13. LOCATION LC-39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 4 Hours	
16. SUPPORT REQUIREMENTS  1. Range frequency clearance (240.2 MHZ), closed loop 2. LCC Telemetry Checkout Equipment (Stage and Common module)			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 1. Instrumentation Program and Components List 2. Telemeter Checkout Rack Drawing, K-VE2-03037-1			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
TEST TITLE <b>TELEMETRY, PCM SYSTEM FUNCTIONAL TEST</b>		V-28218 206 & Subs LC-39	
<p>The objective of this test is to verify acceptable performance of the PCM FM System. Parameters measured during this test are:</p> <ol style="list-style-type: none"> <li>1. 600 KHZ VCO-Power Output and VCO Deviation</li> <li>2. Transmitter Center Frequency and Deviation</li> <li>3. Bit Rate and Encoding Accuracy of PCM/DDAS Assembly</li> <li>4. Multiplexer Inflight Calibration Levels and Sequence</li> <li>5. Frame and Master Frame Time Slot and Bit Pattern</li> <li>6. Multiplexer Programming Verification</li> </ol>			
<p>THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>The VCO Power Output is determined by observing the VCO line driver input measurement on ESE. The voltage read is compared to a calibration curve for the ESE channel and VCO power is then determined. At the CIF/TCE (2P12) the GPI Transmitter and VCO 600 KHZ center frequency and frequency deviation are obtained by zero beating each signal with a test oscillator frequency. A circular Lissajous pattern is obtained and the corresponding test oscillator frequency is read from a frequency counter.</p> <p>The PCM bit rate is determined by monitoring the clock output. The Model 270 multiplexers are checked for reception of inflight and single point calibrations. Frames 9 &amp; 10, Channel 28, of both multiplexers are observed for encoding accuracy of zero and five volts, respectively. Proper bit configuration and time slots for the frame and master frame sync words are verified by observing bit indications on the D/A Converter (Cal-Up) Panel.</p> <p>Multiplexer inflight levels and sequence are verified by observing calibration levels of each representative multiplexer channel as displayed on CIF/TCE (291) Chart Recorder.</p> <p>The S-IB Stage shall be in a vertical, mated configuration.</p>			
<p style="text-align: center;"><b>TEST REQUIREMENTS</b>            MSFC: 3.2.2.1 thru 3.2.2.8.1; 3.2.3.1 or 3.2.3.2            KSC: N/A</p>			
B	7-16-74	To reflect new locations of TM Checkout Equipment	<i>[Signature]</i> 7-3-74
A	2-6-73	Revised Measuring method for VCO Frequency and Deviation	<i>[Signature]</i> L. C.
6 REV.	DATE	REASON	APPROVAL
			Contractor Approval: KSC Approval:
J.R. Howard		JDM	CCSD
12-7-71			
L. C. Blanchard		LV-INS-12	12-15-71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
TEST TITLE <b>TELEMETRY, PCM SYSTEM FUNCTIONAL TEST</b>		V-28218 206 & Subs LC-39	
TEST LOCATION <b>VAB</b>	COMPUTER PROGRAM IDENTIFICATION <b>N/A</b>	TEST TIME <b>6 Hours</b>	
<p>1. Range Frequency Clearance is required (256.2 MHZ)</p> <p>2. S-IB Stage Power</p> <p>3. CIF/TCE (2P12 &amp; 291)</p> <p>4. N/A</p> <p>5. RCA-110A Computer Complex</p> <p>6. Access to Instrumentation Compartment #13</p>			
<p>17 OTHER APPLICABLE REFERENCE DOCUMENTATION</p> <ol style="list-style-type: none"> <li>1. Instrumentation Program and Components List</li> <li>2. S-IB Stage Cable Interconnection Diagram</li> <li>3. S-IB Stage Electrical Schematics</li> </ol>			
18 ITEM CONTINUATION			

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>												
SHELF LIFE EXTENSION TEST FOR COMMAND DECODER 50M10699 (STANDBY)		KSC TEST NUMBER <b>V-28223</b> EFFECTIVITY <b>AS REQUIRED</b>												
<p>THE OBJECTIVE OF THIS PROCEDURE IS TO VERIFY THAT THE DECODER MEETS THE REQUIRED SPECIFICATIONS FOR THE EXTENSION OF SHELF LIFE.</p>														
<p>THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p>														
<p>THE DECODER WILL BE TESTED IN AN ENVIRONMENTAL CHAMBER TO MEET THE REQUIRED OPERATIONAL SPECIFICATIONS FOR THE EXTENSION OF SHELF LIFE. THE TESTS WILL BE CONDUCTED UNDER VARIOUS TEMPERATURE CONDITIONS AND AT THE RECOMMENDED MINIMUM/MAXIMUM OPERATING VOLTAGES. TESTS TO BE REPERFORMED WILL INCLUDE THE FOLLOWING:</p> <ol style="list-style-type: none"> <li>1. COMMAND LOGIC TEST</li> <li>2. SENSITIVITY TEST</li> <li>3. TM OUTPUT TEST</li> <li>4. 2.2 VOLT BLOCKING TEST</li> <li>5. QUIESCENT CURRENT TEST</li> <li>6. TWO-TONE CURRENT TEST</li> <li>7. MAXIMUM OPERATING CURRENT CONSUMPTION TEST</li> <li>8. HARDWARE SENSITIVITY TEST</li> <li>9. POWER SWITCH LEAKAGE TEST</li> <li>10. FLEXPPOINT TEST</li> <li>11. Negative spikes on output pulse less than 3.0 volts amplitude.</li> </ol>														
<p>RE-TOLE CONFIGURATION: N/A</p>														
<p>MSFC REQUIREMENTS:</p> <table border="0"> <tr> <td>3.0.0.2.1</td> <td>3.0.0.2.1.2.6</td> </tr> <tr> <td>3.0.0.2.1.2.1</td> <td>3.0.0.2.1.2.7</td> </tr> <tr> <td>3.0.0.2.1.2.2</td> <td>3.0.0.2.1.2.8</td> </tr> <tr> <td>3.0.0.2.1.2.3</td> <td>3.0.0.2.1.2.9</td> </tr> <tr> <td>3.0.0.2.1.2.4</td> <td>3.0.0.2.1.2.10</td> </tr> <tr> <td>3.0.0.2.1.2.5</td> <td></td> </tr> </table>			3.0.0.2.1	3.0.0.2.1.2.6	3.0.0.2.1.2.1	3.0.0.2.1.2.7	3.0.0.2.1.2.2	3.0.0.2.1.2.8	3.0.0.2.1.2.3	3.0.0.2.1.2.9	3.0.0.2.1.2.4	3.0.0.2.1.2.10	3.0.0.2.1.2.5	
3.0.0.2.1	3.0.0.2.1.2.6													
3.0.0.2.1.2.1	3.0.0.2.1.2.7													
3.0.0.2.1.2.2	3.0.0.2.1.2.8													
3.0.0.2.1.2.3	3.0.0.2.1.2.9													
3.0.0.2.1.2.4	3.0.0.2.1.2.10													
3.0.0.2.1.2.5														
8-5-74 To reflect ET-66041 to 60C6050		M. Glue 1/17/74												
A 5-21-73 To reflect ET-66009R2 to 60C06050		M. Glue 5/11/73												
CONTRACTOR APPROVAL <i>Walter Glue</i>		CONTRACTOR APPROVAL <i>W. Glue</i>												
ORGANIZATION CHRYSLER CORP., SPACE DIVISION		DATE 12-16-71												
ORGANIZATION LV-INS-11		APPROVAL DATE 12-21-71												

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
TEST TITLE SHELF LIFE EXTENSION TEST FOR COMMAND DECODER 50M10699 (STANDBY)		
LOCATION LC-39		
SUPPORT REQUIREMENTS 1. CCSD O.C. 2. DRSC GSE (LC-39 ROOM 2P10)		
OTHER APPLICABLE REFERENCE DOCUMENTATION 1. EXTENSION OF SHELF LIFE TESTING FOR SRS DECODER (50M16422) 2. AVCO INSTRUCTION MANUAL - DECODER AVCO MODEL 331800		
ITEM CONTINUATION		

KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
TEST TITLE SHELF LIFE EXTENSION TEST FOR COMMAND RECEIVER MCR-503 50M10697 (STANDBY)		KSC TEST NUMBER V-28224
TEST OBJECTIVES THE OBJECTIVE OF THIS PROCEDURE IS TO VERIFY THAT THE COMMAND RECEIVER MEETS THE REQUIRED SPECIFICATIONS FOR THE EXTENSION OF SHELF LIFE.		EFFECTIVITY AS REQUIRED
DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. THE RECEIVER WILL BE TESTED IN AN ENVIRONMENTAL CHAMBER TO MEET THE REQUIRED OPERATIONAL SPECIFICATIONS FOR THE EXTENSION OF SHELF LIFE. THE TESTS WILL BE CONDUCTED UNDER VARIOUS TEMPERATURE CONDITIONS AND AT THE RECOMMENDED MINIMUM/MAXIMUM OPERATING VOLTAGES. TESTS TO BE PERFORMED WILL INCLUDE THE FOLLOWING: 1. AUDIO OUTPUT TEST 2. AUDIO BANDWIDTH TEST 3. INPUT POWER TEST 4. RECEIVER QUIETING 5. LOW LEVEL TM TEST 6. OVERALL RF BANDWIDTH TEST 7. INPUT VOLTAGE TEST 8. IMAGE REJECTION TEST 9. ELECTRICAL RESISTANCE TESTS  VEHICLE CONFIGURATION - N/A  MSFC REQUIREMENTS: 3.0.0.2.1 3.0.0.2.1.1.8 3.0.0.2.1.1.1 3.0.0.2.1.1.9 3.0.0.2.1.1.2 3.0.0.2.1.1.10 3.0.0.2.1.1.3 3.0.0.2.1.1.11 3.0.0.2.1.1.4 3.0.0.2.1.1.5 3.0.0.2.1.1.6 3.0.0.2.1.1.7		
DATE 5/21/73	REASON To reflect FT-66009R2 to 60C06050	DATE 10/30/73
DATE 5/21/73	ORGANIZATION CHRYSLER CORP, SPACE DIVISION	DATE 10-10-71
DATE 5/21/73	ORGANIZATION 1-116-11	DATE 12-21-71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
TEST TITLE SHELF LIFE EXTENSION TEST FOR COMMAND RECEIVER MCR-503 50M10697 (STANDBY)		KSC TEST NUMBER V-28224
LOCATION LC-39	COMPUTER PROC. IDENTIFICATION N/A	EFFECTIVITY AS REQUIRED
SUPPORT REQUIREMENTS 1. CCSD O.C. 2. RANGE FREQUENCY CLEARANCE FOR 450, 241, AND 471 MHE. 3. DRSC GSE (LCC-39, Room 2P10)		
OTHER APPLICABLE REFERENCE DOCUMENTATION 1. EXTENSION OF SHELF LIFE TESTING FOR COMMAND RECEIVER MCR-503 (50M10697) 2. MOTOROLA INSTRUCTION MANUAL - RECEIVER MODEL MCR 503		
ITEM CONTINUATION		

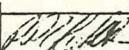
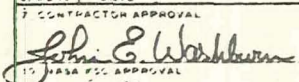


KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER V-28231	
IU COMMAND BENCH TEST (STANDBY)	3. EFFECTIVITY AS REQUIRED	
4. TEST OBJECTIVES		
TO VERIFY THE OPERATING PARAMETERS OF THE IU COMMAND SYSTEM ARE WITHIN TOLERANCE.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION		
THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
DESCRIPTION		
<p>SIGNALS ARE FED FROM THE LABORATORY GSE TO THE IU COMMAND SYSTEM ON THE BENCH. THE RF SIGNAL GENERATOR IS USED AS A 450 MHZ SOURCE. ITS OUTPUT IS FM MODULATED BY THE COMMAND SIMULATOR AND FED TO THE COMMAND RECEIVER. RECEIVER DEVIATION SENSITIVITY IS DETERMINED BY INCREASING THE DEVIATION OF THE TEST SIGNAL UNTIL THE RECEIVER OUTPUT IS 1.27 VRMS AND MEASURING THE DEVIATION AT THIS POINT. FOR BANDWIDTH MEASUREMENT, THE UNMODULATED SIGNAL GENERATOR OUTPUT LEVEL IS INCREASED 3DB, AND ITS FREQUENCY VARIED ABOVE, THEN BELOW 450 MHZ UNTIL THE TM LO OUTPUT DECREASES TO 2.0V. THE FREQUENCIES AT THESE TWO POINTS DETERMINE THE 3DB BANDWIDTH. THE AVERAGE OF THE TWO IS RECEIVER CENTER FREQUENCY. THE 60DB BANDWIDTH IS DETERMINED IN THE SAME MANNER AS THE 3DB BANDWIDTH. RECEIVER QUIETING IS DETERMINED BY MEASURING THE DIFFERENCE IN OUTPUT FOR NO INPUT AND FOR 10UV INPUT. SYSTEM SENSITIVITY, BANDWIDTH, CENTER FREQUENCY, AND DEVIATION SENSITIVITY ARE DETERMINED IN A MANNER SIMILAR TO THE RECEIVER PARAMETERS EXCEPT 100% AVP THRESHOLD IS THE LIMIT INDICATION. DECODING ACCURACY IS TESTED BY SUCCESSIVELY COMPLEMENTING EACH BIT OF A CORRECT MESSAGE AND OBSERVING PROPER DECODER OPERATION. SYSTEM PHASE SHIFT IS MEASURED BY VARYING THE PHASE BETWEEN THE 1 AND 2 KHZ TO THE POINT WHERE 100% AVP'S CAN JUST BE MAINTAINED; AND THEN MEASURING THE PHASE DIFFERENCE ON AN OSCILLOSCOPE. DATA DECODING ACCURACY, ADDRESS VERIFICATION AND COMPUTER RESET ARE DISPLAYED BY INDICATOR LIGHTS ON DECODER DISPLAY AND ARE INTERPRETED FOR PROPER OPERATION.</p>		
CONFIGURATION: N/A		
TEST REQUIREMENTS: MSFC: 7921601		
PHASE: N/A		
0.3.2.4.4.1.1 THRU 0.3.2.4.4.1.10		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
<i>[Signature]</i>	IBM - 967	6-5-72
10. NASA APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
<i>[Signature]</i>	6-5-72	6-19-72

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
IU COMMAND BENCH TEST (STANDBY)	V-28231	
3. EFFECTIVITY		4. EST. TEST TIME
AS REQUIRED		1 MAN - 4 HOURS
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	
VAB 26E7	N/A	
15. SUPPORT REQUIREMENTS		
INTERSTAGE: NONE		
OFF-COMPLEX: FREQUENCY CLEARANCE FOR 450 MHZ, CLOSED LOOP		
ON-COMPLEX: FACILITY COMMUNICATIONS (OIS) QUALITY INSPECTOR		
16. OTHER APPLICABLE REFERENCE DOCUMENTATION		
MSFC #111-5-509-8; 111-5-510-17; 111-5-510-26		
17. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE IU RF SYSTEMS SUPPORT - VAB		2. KSC TEST NUMBER V-28232	
		3. EFFECTIVITY AS-206 & SUBS	
4. TEST OBJECTIVES TO VERIFY THAT THE RF SYSTEMS FUNCTION PROPERLY; AND TO SUPPORT OTHER LAUNCH VEHICLE TESTING.			
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. DESCRIPTION: A. COMMAND - SIGNALS ARE TRANSMITTED BY HARDLINE FROM THE RF GSE TO THE IU COMMAND SYSTEM ABOARD THE VEHICLE. THE RF SIGNAL GENERATOR IS THE 450 MHZ SIGNAL SOURCE. ITS OUTPUT, MODULATED BY THE ACS, IS FED TO THE COMMAND RCVR INPUT. USING DECODER AVP AS THE CRITERION SYSTEM BANDWIDTH, CENTER FREQUENCY, SENSITIVITY, DEVIATION SENSITIVITY AND MESSAGE DECODING ARE CHECKED TO ENSURE THE ONBOARD SYSTEM FUNCTIONS PROPERLY. THE GSE IS CONFIGURED TO SUPPORT THE INTEGRATED TEST IN PROGRESS. B. RADAR - THE GSE IS PREPARED TO CHECKOUT THE ON BOARD SYSTEMS. SIGNALS WILL BE SENT BETWEEN THE GSE AND THE TRANSPONDER IN THE IU. POWER OUTPUT IS MEASURED VIA A RF POWER METER. RECEIVER SENSITIVITY IS MEASURED BY DECREASING THE SIGNAL LEVEL INTO THE TRANSPONDER UNTIL COUNTDOWN OCCURS. RECEIVER AND TRANSMITTER CENTER FREQUENCIES ARE MEASURED VIA A FREQUENCY COUNTER. PULSE SHAPES, DELAY TIME, AND PULSE CODE SPACING ARE MEASURED BY OBSERVING THE DETECTED PULSE OUTPUTS ON AN OSCILLOSCOPE. TELEMETRY OUTPUTS ARE MEASURED. THE INHIBIT CIRCUITS ARE TESTED BY ATTEMPTING TO INTERROGATE THE TRANSPONDERS AND MONITORING FOR REPLYS WITH THE INHIBIT APPLIED. THE INHIBIT IS REMOVED AND THE GSE CONTINUES TO INTERROGATE THE TRANSPONDER IN SUPPORT OF OTHER VEHICLE TESTING AS REQUIRED. CONFIGURATION: IU LOCATED IN THE VAB IN ERECTED POSITION; IU COOLING AND POWER ON; ANTENNA COUPLERS AND TRANSMISSION SYSTEM CONNECTED TO IU RADAR ANTENNA. PHASE: III, IV, VA TEST REQUIREMENTS MSFC: 7921601 0.3.2.4.2.5 0.3.2.4.4.1			
6. REV. DATE REASON		7. CONTRACTOR APPROVAL	
A 8/27/74 REVISED MSFC REQUIREMENTS		 Contractor Approval	
8. ORGANIZATION		9. DATE	
1144 - 967		5-4-72	
10. NASA ESC APPROVAL		12. APPROVAL DATE	
 NASA ESC Approval		6-18-72	
11. ORGANIZATION			
LV-INS-11			

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE IU RF SYSTEMS SUPPORT - VAB		2. KSC TEST NUMBER V-28232	
		3. EFFECTIVITY AS-206 & SUBS	
13. LOCATION VAB 26E7, PAD B	14. COMPUTER PROC. IDENTIFICATION FT45, FT47	15. EST. TEST TIME 4 MEN - 4 HOURS	
16. SUPPORT REQUIREMENTS RD 41460 INTERSTAGE: NONE OFF-COMPLEX: RF CLEARANCE FOR 450, 5690, 5765 MHZ; USB 450 MHZ XMTR FOR LV/MCC(SIT) ON COMPLEX: IU POWER AND COOLING, IU MEASURING, DDAS, OIS, RCA 110A, LVDA/LVDC, QUALITY INSPECTOR			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION MSFC III-5-510-26, III-5-510-17, III-5-509-8, III-5-510-18; KSC PRINTS 79K01227, 77K09177			
18. ITEM CONTINUATION			

2

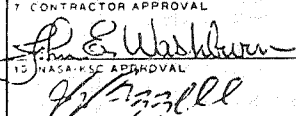
REV 32

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE IU RF SYSTEMS SUPPORT - PAD		2. KSC TEST NUMBER V-28233	
		3. EFFECTIVITY AS-206 & SUBS	
4. TEST OBJECTIVES  TO VERIFY THAT THE RF SYSTEMS FUNCTION PROPERLY; AND TO SUPPORT OTHER LAUNCH VEHICLE TESTING.			
5. TEST DESCRIPTION/EQUIPMENT STATUS CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  DESCRIPTION: INSTRUCTIONS FOR GSE SET-UP AND QUICK LOOK EVALUATION OF THE OPERATION OF IU COMMAND AND RADAR AIRBORNE EQUIPMENT IS PROVIDED. RADAR IS TESTED BY EITHER THE GSE OR ETR, OR BOTH AS REQUIRED BY THE INTEGRATED TCP. IU COMMAND IS TESTED BY THE GSE OR GMIL AS REQUIRED BY THE INTEGRATED TCP. PROVISION IS MADE FOR THE GSE TO CAPTURE THE COMMAND RECEIVER AND SEND UPDATA COMMANDS CLOSED LOOP, AS WELL AS OPEN LOOP.  CONFIGURATION: VEHICLE ON PAD B; BOTH GSE AND AIRBORNE SYSTEMS CONNECTED AS REQUIRED TO SUPPORTED INTEGRATED TEST.          PHASE: VB, VI  <div style="text-align: right;"><u>TEST REQUIREMENTS</u> MSFC: 7921601 0.3.2.4.2.4.1 0.3.2.4.2.5 0.3.2.4.4.1</div>			
A 8/27/74 REVISED MSFC REQUIREMENTS		<i>[Signature]</i> 8-31-74	
6. REV. DATE		REASON	
7. CONTRACTOR APPROVAL <i>[Signature]</i>		8. ORGANIZATION IBM-967	
9. DATE 5-8-72		10. APPROVAL DATE 6-16-72	
11. ORGANIZATION LV-INS-11			

KSC FORM 36-318 (7-67)

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE IU RF SYSTEMS SUPPORT - PAD		2. KSC TEST NUMBER V-28233	
		3. EFFECTIVITY AS-206 & SUBS	
13. LOCATION 26E7, LC 39B	14. COMPUTER PROC. IDENTIFICATION FT45, FT47	15. EST. TEST TIME 6 MEN - 4 HRS	
16. SUPPORT REQUIREMENTS  RD 41460  INTERSTAGE REQUIREMENTS: NONE  OFF-COMPLEX: RF CLEARANCE FOR 450, 5690, 5765 MHZ; ETR READOUT OF IU RADAR; GMIL READOUT OF IU COMMAND.  ON-COMPLEX: IU POWER AND COOLING, IBM QA, OIS, DDAS, IU TELEMETRY, IU MEASURING, 23D111 BUS POWER IN LUT			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  IBM TECHNICAL MANUALS 66-699-0019; 67-966-0014; 66-966-0020			
18. ITEM CONTINUATION			



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
RF ANTENNA ORIENTATION AND MSS CABLE CHECKS		V-28234	
3. EFFECTIVITY		AS-206 & SUBS	
4. TEST OBJECTIVES			
<p>PHYSICALLY ORIENT MSS REPEATER ANTENNAS FOR OPTIMUM OPERATION WITH ETR GROUND STATIONS, AND VAB ROOF ANTENNAS; ORIENT VAB ROOF ANTENNAS TO MSS; TO MEASURE DELAY AND ATTENUATION OF MSS REPEATER ANTENNA SYSTEM; TO MEASURE ATTENUATION FROM THE LUT GSE TO THE INPUT OF THE COMMAND RECEIVER.</p>			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION			
<p>THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>DESCRIPTION:</p> <p>A. FOR ATTENUATION MEASUREMENTS, A SIGNAL OF KNOWN VALUE IS INJECTED INTO TRANSMISSION SYSTEM UNDER TEST AND SIGNAL LEVEL ARRIVING AT OPPOSITE END IS MEASURED. THE DIFFERENCE IS RECORDED AS SYSTEM LOSS.</p> <p>B. FOR RADAR DELAY, A RADAR TRANSPONDER IS OPERATED AT THE POINT WHERE DELAY MEASUREMENT IS REQUIRED AND RADAR GSE IS USED TO MEASURE THE DELAY.</p> <p>C. FOR ANTENNA ALIGNMENT THE GSE (VAB, USB OR ETR, AS APPLICABLE) GENERATES SIGNALS THAT ARE FED THROUGH MSS ANTENNAS TO A LAB RECEIVER (IU COMMAND) OR A TRANSPONDER (RADAR). THE ANTENNAS ARE THEN ALIGNED FOR MAXIMUM RECEIVED SIGNAL.</p> <p>REQUIREMENTS:</p> <p>FLIGHT: NONE</p> <p>GSE: MSS PARKED IN CHECKOUT POSITION AT PAD 39B</p> <p>SAFETY: THE BUDDY SYSTEM WILL BE USED FOR OPERATIONS ON VAB ROOF AND ON MSS ANTENNAS.</p> <p>SAFETY GLASSES MUST BE WORN ON VAB ROOF.</p> <p>PHASE: <u>V</u></p> <p>TEST REQUIREMENTS</p> <p>MSFC: N/A</p>			
A		10/25/72 REVISE BLOCKS 5 & 16	
6. REV.		DATE	
7. CONTRACTOR APPROVAL		REASON	
 Phil E. Washburn		IBM-967	
8. ORGANIZATION		9. DATE	
11. ORGANIZATION		12. APPROVAL DATE	
LV-IA-5-11		6-5-72	
		6-19-72	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE		2. KSC TEST NUMBER	
RF ANTENNA ORIENTATION AND MSS CABLE CHECKS		V-28234	
3. EFFECTIVITY		AS-206 & SUBS	
13. LOCATION VAB ROOF		14. COMPUTER PROC. IDENTIFICATION	
26B7, MSS		N/A	
15. EST. TEST TIME		5 MEN - 16 HOURS	
16. SUPPORT REQUIREMENTS			
RD 41460			
INTERSTAGE: NONE			
OFF-COMPLEX: OPEN LOOP FREQUENCY CLEARANCE FOR 450 MHZ, 5690 MHZ, AND 5765 MHZ, ETR RADAR SUPPORT, GMIL SUPPORT.			
ON-COMPLEX: FACILITY OIS, QUALITY INSPECTOR.			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
NONE			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE ____ OF ____	
1. TEST TITLE MAINTENANCE AND REPAIR OF MANSFIELD AND GREEN MODEL 10 HYDRAULIC PRESSURE TEST UNIT		2. KSC TEST NUMBER V-30049	
4. TEST OBJECTIVES TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE HYDRAULIC PRESSURE TEST UNIT.		3. EFFECTIVITY GSE	
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION <p>THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY</p> <p>PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY</p> <p>TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING</p> <p style="text-align: center;"><u>TEST REQUIREMENTS</u> NA</p>			
6. REV.    DATE    REASON    Contractor Approval    KSC Approval			
7. CONTRACTOR APPROVAL <i>[Signature]</i>		8. ORGANIZATION BATC 5-8534	
9. DATE 10/25/67		10. NASA-KSC APPROVAL <i>[Signature]</i>	
11. ORGANIZATION LU-MCC-1		12. APPROVAL DATE 2 NOV 67	

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE MAINTENANCE AND REPAIR OF MANSFIELD AND GREEN MODEL 10 HYDRAULIC PRESSURE TEST UNIT		2. KSC TEST NUMBER V-30049	
3. EFFECTIVITY GSE		4. EST. TEST TIME	
13. LOCATION VAB 1K	14. COMPUTER PROC. IDENTIFICATION NA	15. SUPPORT REQUIREMENTS	
<p>GN<sub>2</sub> GHE SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING REQUIREMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA</p>			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>    </u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M05869 LCLV-5, VALVE CONTROL, PNEUMATIC OPERATED, LOX SYSTEM A22111 COMPANY		2. KSC TEST NUMBER V-30050	
3. TEST OBJECTIVES TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE FOLLOWING VALVE: NASA P/N 75M05869 LCLV-5 VENDOR P/N 4491 4805 1377		3. EFFECTIVITY GSE	
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY. PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY. TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  PHASE <u>NA</u> TEST REQUIREMENTS <u>NA</u>			
<div style="font-size: 4em; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>			
A 5-30-74 Cancel - Requirement Deleted		REPA-Proc 5/30/74	
6. REV.	DATE	REASON	
7. CONTRACTOR APPROVAL <i>[Signature]</i>	8. ORGANIZATION BATC 5-8534	9. DATE 10/25/61	Contractor Approval
10. NASA-KSC APPROVAL <i>[Signature]</i>	11. ORGANIZATION LU-MSC -1	12. APPROVAL DATE 2 NOV 67	KSC Approval

KSC FORM 28-990 (7/67)

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M00799, VALVE, VENT CHECK MAROTTA VALVE CORPORATION P/N 232783, MODEL CV33		2. KSC TEST NUMBER V-30055
4. TEST OBJECTIVES TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE VALVE.		3. EFFECTIVITY GSE
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  <div style="text-align: center;"><u>TEST REQUIREMENTS</u> NA</div>		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL F. L. KUTCH	8. ORGANIZATION BATC 5-8534	9. DATE NOVEMBER 10, 1967
10. NASA-KSC APPROVAL D. A. SCOVILLE	11. ORGANIZATION LV-MEC-1	12. APPROVAL DATE 11/14/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M00799, VALVE, VENT CHECK MAROTTA VALVE CORPORATION P/N 232783, MODEL CV33		2. KSC TEST NUMBER V-30055
13. LOCATION VAB 1K11		14. COMPUTER PROC. IDENTIFICATION NA
15. SUPPORT REQUIREMENTS GN2 GHE SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING EQUIPMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA		16. EST. TEST TIME 24 HOURS
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3970		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, SOLENOID, NASA P/N 75M11869, MAROTTA VALVE CORPORATION, MODEL 100AS		2. KSC TEST NUMBER V-30066	
4. TEST OBJECTIVES  To describe the maintenance, repair and functional testing of the following valve:  NASA P/N 75M11869		3. EFFECTIVITY GSE	
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby  Prime test organization is Mechanical Systems Laboratory  Test Parts are: Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  <u>Test Requirements</u>  NA			
6. REV.		DATE	
7. CONTRACTOR APPROVAL <i>F. L. Kutch</i> F. L. Kutch		8. ORGANIZATION BATC 5-8534	
9. NASA-KSC APPROVAL <i>D. A. Scoville</i> D. A. Scoville		10. ORGANIZATION LV-MEC-1	
11. DATE 11/15/67		12. APPROVAL DATE 11/16/67	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, SOLENOID, NASA P/N 75M11869, MAROTTA VALVE CORPORATION, MODEL 100AS		2. KSC TEST NUMBER V-30066	
3. EFFECTIVITY GSE		4. EST. TEST TIME 24 Hours	
5. LOCATION VAB 1K11		6. COMPUTER PROC. IDENTIFICATION NA	
7. SUPPORT REQUIREMENTS  GN2 GHe Spare Parts Special Tools are required Cleaning Equipment Functional Test Equipment Environmentally controlled area			
8. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3981			
9. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE /75M14522 LBFV-1 MAINTENANCE AND REPAIR OF NASA P/N 75M05869 LBFV-1 VALVE, CRYOGENIC HANDLING, BUTTERFLY B. H. HADLEY, INC.		2. KSC TEST NUMBER V-30079
4. TEST OBJECTIVES  TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE VALVE.		3. EFFECTIVITY AS REQUIRED
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY.  PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY.  TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  <div style="text-align: center;"><u>TEST REQUIREMENTS</u></div>		
6. REV. DATE REASON A 8-9-68 ADD NASA P/N 75M14522 LBFV-1 DELETE VENDOR P/N. REVISE EFFECTIVITY.		
7. CONTRACTOR APPROVAL G. L. KUTCH	8. ORGANIZATION BATC 5-8534	9. DATE NOVEMBER 9, 1967
10. NASA KSC APPROVAL [Signature]	11. ORGANIZATION LV-MEC-1	12. APPROVAL DATE 11/14/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE 75M14522 LBFV-1 MAINTENANCE AND REPAIR OF NASA P/N 75M05869 LBFV-1 VALVE, CRYOGENIC HANDLING, BUTTERFLY B. H. HADLEY, INC.		2. KSC TEST NUMBER V-30079
13. LOCATION VAB 1K11		3. EFFECTIVITY AS REQUIRED
14. COMPUTER PROC. IDENTIFICATION NA		15. EST. TEST TIME 24 HOURS
16. SUPPORT REQUIREMENTS  GN2 GHE SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING REQUIREMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3562		
18. ITEM CONTINUATION		



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>																	
1. TEST TITLE MAINTENANCE AND REPAIR OF REGULATOR 3/8" PNEUMATIC SYSTEM, MAROTTA VALVE CORP., P/N 219004-B-155, J-151 AND B-111 MODEL RV-31, NASA P/N 75M08830-1, -2, -3		2. KSC TEST NUMBER V-30088 3. EFFECTIVITY GSE																	
4. TEST OBJECTIVES  To maintain, repair and functionally test the following regulator:  <div style="display: flex; justify-content: space-between;"> <div> NASA P/N 75M08830-3 75M08830-1 &amp; 75M08830-2 </div> <div> VENDOR P/N 219004-B-111 219004-B-155 219004-J-151 Model RV-31 </div> </div>																			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test parts are: Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging   <div style="text-align: right;"> <u>Test Requirements</u>   NA </div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">A</td> <td style="width: 15%;">2-26-68</td> <td style="width: 60%;">CORRECT &amp; ADD P/N'S PER REV. G 75M08830</td> <td style="width: 20%; text-align: center;"> <i>Donal Scoville</i>  2-26-68 </td> </tr> <tr> <td>6. REV.</td> <td>DATE</td> <td>REASON</td> <td>Contractor Approval</td> </tr> <tr> <td colspan="2">7. CONTRACTOR APPROVAL <i>F.L. Kutch</i></td> <td>8. ORGANIZATION BATC 5-8534</td> <td>9. DATE 11/13/62</td> </tr> <tr> <td colspan="2">10. NASA-KSC APPROVAL <i>Donal Scoville</i> D.A. Scoville</td> <td>11. ORGANIZATION LV-MEC-1</td> <td>12. APPROVAL DATE 11/14/67</td> </tr> </table>				A	2-26-68	CORRECT & ADD P/N'S PER REV. G 75M08830	<i>Donal Scoville</i> 2-26-68	6. REV.	DATE	REASON	Contractor Approval	7. CONTRACTOR APPROVAL <i>F.L. Kutch</i>		8. ORGANIZATION BATC 5-8534	9. DATE 11/13/62	10. NASA-KSC APPROVAL <i>Donal Scoville</i> D.A. Scoville		11. ORGANIZATION LV-MEC-1	12. APPROVAL DATE 11/14/67
A	2-26-68	CORRECT & ADD P/N'S PER REV. G 75M08830	<i>Donal Scoville</i> 2-26-68																
6. REV.	DATE	REASON	Contractor Approval																
7. CONTRACTOR APPROVAL <i>F.L. Kutch</i>		8. ORGANIZATION BATC 5-8534	9. DATE 11/13/62																
10. NASA-KSC APPROVAL <i>Donal Scoville</i> D.A. Scoville		11. ORGANIZATION LV-MEC-1	12. APPROVAL DATE 11/14/67																

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF REGULATOR 3/8" PNEUMATIC SYSTEM. MAROTTA VALVE CORP., P/N 219004-B155, J-151 AND B-111 MODEL RV-31, NASA P/N 75M08830-1, -2 -3		2. KSC TEST NUMBER V-30088	
13. LOCATION VAB 1K 11		3. EFFECTIVITY GSE	
14. COMPUTER PROC. IDENTIFICATION NA		19. EST. TEST TIME 24 hours	
16. SUPPORT REQUIREMENTS GN2 GHe Spare parts Special tools as required Cleaning requirement Functional test equipment Environmentally controlled area			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3581			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>									
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M09286 VALVE, RELIEF, MAROTTA VALVE CORP. P/N 231074		2. KSC TEST NUMBER V-30090									
		3. EFFECTIVITY GSE									
4. TEST OBJECTIVES TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE FOLLOWING VALVE:  <div style="display: flex; justify-content: space-between;"> <div>NASA P/N 75M09286</div> <div>VENDOR P/N 231074</div> <div>MODEL PRV4M</div> </div>											
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION <p>THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY.</p> <p>PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY.</p> <p>TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING</p> <p style="text-align: center;"><u>TEST REQUIREMENTS</u> NA</p>											
<table border="1" style="width: 100%;"> <tr> <td>B</td> <td>4-15-68</td> <td>DELETE -22, -23, NOT REQUIRED</td> <td><i>[Signature]</i></td> </tr> <tr> <td>A</td> <td>5-11-68</td> <td>75M17331 INCORPORATED INTO 75M09286</td> <td><i>[Signature]</i></td> </tr> </table>				B	4-15-68	DELETE -22, -23, NOT REQUIRED	<i>[Signature]</i>	A	5-11-68	75M17331 INCORPORATED INTO 75M09286	<i>[Signature]</i>
B	4-15-68	DELETE -22, -23, NOT REQUIRED	<i>[Signature]</i>								
A	5-11-68	75M17331 INCORPORATED INTO 75M09286	<i>[Signature]</i>								
6. REV.	DATE	REASON	9. DATE								
7. CONTRACTOR APPROVAL <i>[Signature]</i> F. L. KUTCH	8. ORGANIZATION BATC 5-8534	10. NASA-KSC APPROVAL <i>[Signature]</i> D. A. SCOVILLE	11. ORGANIZATION LV-MEC-1								
		12. APPROVAL DATE 11/14/67									

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M09286 VALVE, RELIEF, MAROTTA VALVE CORP. P/N 231074		2. KSC TEST NUMBER V-30090	
		3. EFFECTIVITY GSE	
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 HOURS	
16. SUPPORT REQUIREMENTS GN2 GHE SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING EQUIPMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3585			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M09285, SOLENOID VALVE 3-WAY, 2-POSITION, MAROTTA VALVE CORP. P/N 806098		2. KSC TEST NUMBER V-30098	
		3. EFFECTIVITY GSE	
4. TEST OBJECTIVES TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE FOLLOWING VALVE:  <div style="display: flex; justify-content: space-between;"> <div>NASA P/N 75M09285</div> <div>VENDOR P/N 806098, MV-583H-2A</div> </div>			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY.  TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING   <div style="text-align: center;">TEST REQUIREMENTS NA</div>			
6. REV. DATE		REASON	
7. CONTRACTOR APPROVAL <i>Edward T. Kutch</i> F. L. KUTCH		8. ORGANIZATION BATC 34	
9. NASA-KSC APPROVAL <i>D. A. Scoville</i> D. A. SCOVILLE		9. DATE NOVEMBER 9, 1967	
10. NASA-KSC APPROVAL <i>D. A. Scoville</i> D. A. SCOVILLE		11. ORGANIZATION LV-MEC-1	
12. APPROVAL DATE 11/14/67			

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M09285, SOLENOID VALVE, 3-WAY 2-POSITION, MAROTTA VALVE CORP. P/N 806098		2. KSC TEST NUMBER V-30098	
		3. EFFECTIVITY GSE	
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA		15. EST. TEST TIME 24 HOURS
16. SUPPORT REQUIREMENTS  GN2 GHE SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING EQUIPMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3599			
18. ITEM CONTINUATION			

2.12

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE  MAINTENANCE AND REPAIR OF FILTER, HYDRAULIC SYSTEM, MARVEL ENGINEERING COMPANY, P/N C-1-10 NASA P/N 75M06607	2. KSC TEST NUMBER V-30103  3. EFFECTIVITY GSE	
4. TEST OBJECTIVES  To maintain, repair and functionally test the following filter:  <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">NASA P/N 75M06607</div> <div style="text-align: center;">VENDOR P/N C-1-10</div> </div>		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test parts are: Disassembly Inspection Cleaning Lubrication Reassembly Functional test Packaging  <div style="text-align: center;"><u>Test Requirements</u> NA</div>		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL <i>F.L. Kutch</i> F.L. Kutch		8. ORGANIZATION BATC 5-8534
9. NASA-KSC APPROVAL <i>D.A. Scoville</i> D.A. Scoville		10. ORGANIZATION LV-MEC-1
		11. DATE 11/13/67
		12. APPROVAL DATE 11/14/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE  MAINTENANCE AND REPAIR OF FILTER, HYDRAULIC SYSTEM, MARVEL ENGINEERING CO., P/N C-1-10 NASA P/N 75M06607	2. KSC TEST NUMBER V-30103  3. EFFECTIVITY GSE	
13. LOCATION VAB 1K 11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 hours
16. SUPPORT REQUIREMENTS  GN2 GHe Spare parts Special tools as required Cleaning requirement Functional test equipment Environmentally controlled area		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3608		
18. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, LOX SYSTEM, PACIFIC VALVES, INC., P/N S8551EB(6)-12T NASA P/N 75M05869 LGV-7		2. KSC TEST NUMBER V-30112
4. TEST OBJECTIVES To maintain, repair, and functionally test valve:  NASA P/N 75M05869 LGV-7		3. EFFECTIVITY GSE  VENDOR P/N S8551EB(6)-12T
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  <u>Test Requirements</u>  NA		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL <i>F. L. Kutch</i> F. L. Kutch		8. ORGANIZATION BATC 5-8534
10. NASA KSC APPROVAL <i>D. A. Scoville</i> D. A. Scoville		11. ORGANIZATION LV-MEC-1
9. DATE 11/13/67		12. APPROVAL DATE 11/14/67

KSC FORM 23 118 17 871

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, LOX SYSTEM, PACIFIC VALVE, INC., P/N S8551EB(6)-12T NASA P/N 75M05869 LGV-7		2. KSC TEST NUMBER V-30112
13. LOCATION VAB 1K11		14. COMPUTER PROC. IDENTIFICATION NA
16. SUPPORT REQUIREMENTS  GN2 GHe Spare Parts Special tools as required Cleaning requirement Functional test equipment Environmental controlled area		15. EST. TEST TIME 24 hours
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3622-A		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 64-K-F-364, VALVE, MANUAL VACCO VALVE COMPANY P/N M-6P-X465-2G		2. KSC TEST NUMBER V-30115
		3. EFFECTIVITY GSE
4. TEST OBJECTIVES TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE FOLLOWING VALVE:  NASA P/N 64-K-F-364 CODE 2-1-V-G      VENDOR P/N M-6P-X465-2G		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY:  PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY  TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  PHASE NA      TEST REQUIREMENTS NA		
<div style="font-size: 4em; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>		
6. DATE A 6-3-77	CANCEL THIS PROCEDURE -- EQUIPMENT IS NO LONGER USED IN THIS PROGRAM	
7. CONTRACTOR APPROVAL F. L. KUTCH	8. ORGANIZATION BATC 5-8534	9. DATE NOVEMBER 9, 1967
10. NASA/KSC APPROVAL G. A. SCOVILLE	11. ORGANIZATION LV-MEC-1	12. APPROVAL DATE 11/14/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 64-K-F-364, VALVE, MANUAL VACCO VALVE COMPANY P/N M-6P-X465		2. KSC TEST NUMBER V-30115
		3. EFFECTIVITY GSE
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 HOURS
16. SUPPORT REQUIREMENTS GN <sub>2</sub> GH <sub>2</sub> SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING EQUIPMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3625		
18. ITEM CONTINUATION		
<div style="font-size: 4em; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>		

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF NEEDLE VALVE, HI-PRESSURE, 10,000 PSI, PANEL MOUNTING, NASA P/N 75M06582-12, REPUBLIC MANU- FACTURING COMPANY, P/N 154-12SS27P		2. MSC TEST NUMBER V-30124
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	3. EFFECTIVITY AS REQUIRED
16. SUPPORT REQUIREMENTS  GN2 GHe Spare Parts Special tools as required Cleaning requirement Functional test/ equipment Environmental controlled area		18. EST. TEST TIME 24 hours
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3643		
18. ITEM CONTINUATION		

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KSC FORM 23-336 (7-67)

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF MANIFOLD, LOADING, SOLENOID OPERATED, DELUGE WATER SYSTEM, NASA P/N 64-K-F-364, SHEETS 9, 15 AND 16, GROVE VALVE AND REGULATOR COMPANY, P/N M-14003-D		2. KSC TEST NUMBER V-30147	
3. EFFECTIVITY GSE			
4. TEST OBJECTIVES TO DESCRIBE THE MAINTENANCE, REPAIR AND FUNCTIONAL TESTING OF THE WATER SYSTEM:  NASA P/N _____ VENDOR P/N _____ 64-K-F-364, SHEETS 9, 15 AND 16 M-14003-D			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby. Prime test organization is Mechanical Systems Laboratory.  Test parts are - Disassembly Inspection Cleaning Lubrication Functional Test Packaging  <u>Test Requirements NA</u>			
6. REV. DATE REASON Contractor Approval KSC Approval			
7. CONTRACTOR APPROVAL F. L. _____		8. ORGANIZATION BATC 5-34	
9. DATE 11/13/62		10. NASA-KSC APPROVAL D. A. Coville	
11. ORGANIZATION LV-MEC-1		12. APPROVAL DATE 11/14/67	

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF MANIFOLD, LOADING, SOLENOID OPERATED, DELUGE WATER SYSTEM, NASA P/N 64-K-F-364, SHEETS 9, 15 AND 16, GROVE VALVE AND REGULATOR COMPANY, P/N M-14003-D		2. KSC TEST NUMBER V-30147	
3. EFFECTIVITY GSE			
12. LOCATION VAB 1K 11	14. COMPUTER PROC. IDENTIFICATION NA	10. EST. TEST TIME 24 hours	
16. SUPPORT REQUIREMENTS GN2 GHe Spare parts Special tools as required Cleaning equipment Functional test equipment Environmentally controlled area			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLCSEV-3689			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR PRESSURE REDUCING, REGULATOR, NASA P/N 64-K-F-364, GROVE VALVE AND REGULATOR COMPANY, P/N M-13947-W MODEL 211P		2. KSC TEST NUMBER V-30148	
		3. EFFECTIVITY GSE	
4. TEST OBJECTIVES TO DESCRIBE THE MAINTENANCE, REPAIR AND FUNCTIONAL TESTING OF THE REGULATOR:  <div style="display: flex; justify-content: space-between;"> <div>NASA P/N 64-K-F-364</div> <div>VENDOR P/N M-13947-W, MODEL 211P</div> </div>			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby. Prime test organization is Mechanical Systems Laboratory. Test parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional test Packaging  <div style="display: flex; justify-content: space-between;"> <div>Phase NA</div> <div>Test Requirements NA</div> </div>			
<div style="font-size: 4em; opacity: 0.5; transform: rotate(-15deg);">CANCELLED</div>			
A 6-3-74 CANCEL THIS PROCEDURE -- COMPONENT IS NO LONGER USED ON THIS PROGRAM		<div style="display: flex; justify-content: space-between;"> <div>Contractor Approval <i>[Signature]</i> 6/3/74</div> <div>KSC Approval <i>[Signature]</i> 6/3/74</div> </div>	
7. CONTRACTOR APPROVAL <i>[Signature]</i> F. L. Kutch		8. ORGANIZATION BATC 5-8534	
9. DATE 11/13/65		10. APPROVAL DATE 11/14/67	
11. ORGANIZATION LV-MEC-1			

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF PRESSURE REDUCING, REGULATOR, NASA P/N 64-K-F-364, GROVE VALVE AND REGULATOR COMPANY, P/N M-13947-W MODEL 211P		2. KSC TEST NUMBER V-30148	
		3. EFFECTIVITY GSE	
13. LOCATION VAB 1K 11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 hours	
16. SUPPORT REQUIREMENTS GN2 GHe Spare parts Special tools as required Cleaning equipment Functional test equipment Environmentally controlled area			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3692			
18. ITEM CONTINUATION			
<div style="font-size: 4em; opacity: 0.5; transform: rotate(-15deg);">CANCELLED</div>			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF PRESSURE REDUCING REGULATOR DELUGE WATER SYSTEM, NASA P/N 64-K-F-364 SHEET 4, GROVE VALVE AND REGULATOR COMPANY, P/N M-13940-AJ		2. KSC TEST NUMBER V-30149
3. EFFECTIVITY GSE		
4. TEST OBJECTIVES TO DESCRIBE THE MAINTENANCE, REPAIR, AND FUNCTIONAL TESTING OF THE REGULATOR:  <div style="display: flex; justify-content: space-between;"> <div>NASA P/N 64-K-F-364 SHEET 4</div> <div>VENDOR P/N M-13940-AJ</div> </div>		
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY  PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY.  TEST PARTS ARE: DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  <div style="display: flex; justify-content: space-between;"> <div>PHASE NA</div> <div>TEST REQUIREMENTS NA</div> </div>		
<div style="font-size: 4em; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>		
NOTE: DUPLICATE - ORIGINAL MISPLACED		
<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> <div>           6. REV. DATE            7. CONTRACTOR APPROVAL            s/F. L. Kutch         </div> <div>           8. ORGANIZATION            BATC 5-8534         </div> <div>           9. DATE            11-13-67         </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>           10. NASA KSC APPROVAL            s/D. A. Scoville         </div> <div>           11. ORGANIZATION            LV-MEC-1         </div> <div>           12. APPROVAL DATE            11-14-67         </div> </div> </div>		

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF PRESSURE REDUCING REGULATOR DELUGE WATER SYSTEM, NASA P/N 64-K-F-364 SHEET 4, GROVE VALVE AND REGULATOR COMPANY, P/N M-13940-AJ		2. KSC TEST NUMBER V-30149
3. EFFECTIVITY GSE		
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 HOURS
16. SUPPORT REQUIREMENTS  GN <sub>2</sub> GHe Spare Parts Special tools as required Cleaning equipment Functional test equipment Environmentally controlled area		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3693		
18. ITEM CONTINUATION		

CANCELLED

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, BALL, MANUAL, 1" WATER METHANOL SYSTEM, (SERVICE ARMS), NASA P/N 75M07192-1, KOEHLER AIRCRAFT PRODUCTS COMPANY, P/N 3-116815-16		2. KSC TEST NUMBER V-30150
13. LOCATION VAB 1K 11	14. COMPUTER PROC. IDENTIFICATION NA	9. EFFECTIVITY GSE
16. SUPPORT REQUIREMENTS GN2 GHe Spare parts Special tools as required Cleaning equipment Functional test equipment Environmentally controlled area		18. EST. TEST TIME 24 hours
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3694		
18. ITEM CONTINUATION		



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YSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. NAME AND REPAIR OF NASA P/N 75M05869 LRV-7 VALVE, 2" DIA., I. E. LORNGAN COMPANY, MODEL 42W209M		2. KSC TEST NUMBER V-30166	
		3. EFFECTIVITY CSE	
To maintain, repair, and functionally test valve:			
NASA P/N 75M05869 LRV-7		VENDOR P/N MODEL 42W209M	
4. TEST DESCRIPTION THIS TEST DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.			
5. TEST ORGANIZATION Test organization is Mechanical Systems Laboratory.			
6. TEST PARTS ARE - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging			
7. TEST REQUIREMENTS NA			
8. 8-3-61 Cancel - Requirement Deleted			
9. 9-11-66 TEST DATA P/N WITH SPECIFICATION ADDITION			
10. ORGANIZATION BAYC 5-8534		11. ORGANIZATION LV-MEC-1	
12. APPROVAL DATE 11/14/67		13. APPROVAL DATE 11/14/67	

CANCELLED

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF SWITCH, PRESSURE, LIQUID HYDROGEN SYSTEM, CUSTOM COMPONENT COMPANY, P/N 603G1 AND 603G3, NASA P/N 75M05752 HPS-1,-2,-3; 75M14524 HPS-1,-2,-3		2. KSC TEST NUMBER V-30201
4. TEST OBJECTIVES To maintain, repair, and functionally test the following switch:  NASA P/N 75M05752 HPS-1,-2,-3 75M14514 HPS-1,-2,-3		3. EFFECTIVITY AS REQUIRED
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  <div style="text-align: right;"><u>Test Requirements NA</u></div>		
6. REV. DATE A 8-15-68 ADD NASA P/N 75M14524 HPS-1,-2,-3; ADD SIMILAR PARTS -2,-3; CHANGE EFFECTIVITY		
7. CONTRACTOR APPROVAL F.L. Kutch	8. ORGANIZATION BAC 5-8534	9. DATE 11/13/68
10. NASA WSC APPROVAL L. G. Smith	11. ORGANIZATION LV-NEC-1	12. APPROVAL DATE 11/14/68

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF SWITCH, PRESSURE, LIQUID HYDROGEN SYSTEM, CUSTOM COMPONENT COMPANY, P/N 603G1 AND 603G3 NASA P/N 75M05752 HPS-1, -2, -3; 75M14524 HPS-1, -2, -3		2. KSC TEST NUMBER V-30201
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	3. EFFECTIVITY AS REQUIRED
16. SUPPORT REQUIREMENTS: GN2 GHe Spare Parts Special tools as required Cleaning Requirement Functional test equipment Environmental controlled area		15. EST. TEST TIME 24 hours
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLCSEV-3828		
18. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, PILOT CONTROLLED HYDRAULIC BALL, NASA P/N 75M11861, FLODYNE CONTROLS, INC., P/N 15C19		2. KSC TEST NUMBER V-30220	
4. TEST OBJECTIVES To describe the maintenance, repair and functional testing of the following valve:  NASA P/N 75M11861  VENDOR P/N 15C19		3. EFFECTIVITY GSE	
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed as standby.  Prime test organization is Mechanical Systems Laboratory.  Test Parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  <u>Test Requirements NA</u>			
6. REV. DATE		REASON	
7. CONTRACTOR APPROVAL <i>[Signature]</i> V. L. Ruten		8. ORGANIZATION BANC 5-85	
10. NASA KSC APPROVAL <i>[Signature]</i> D. A. Scoville		11. ORGANIZATION LV-MEC-1	
9. DATE 11/13/67		12. APPROVAL DATE 11/14/67	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, PILOT CONTROLLED HYDRAULIC BALL, NASA P/N 75M11861, FLODYNE CONTROLS, INC., P/N 15C19		2. KSC TEST NUMBER V-30220	
13. LOCATION VAB 1K11		14. COMPUTER PROC. IDENTIFICATION NA	
15. SUPPORT REQUIREMENTS  GN <sub>2</sub> GHe Spare Parts Special tools as required Cleaning requirement Functional test equipment Environmental controlled area		16. EST. TEST TIME 24 hours	
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3943			
18. ITEM CONTINUATION			





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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M14551, 76K02549 SOLENOID VALVE, MAROTTA VALVE CORP. P/N 229654, MODEL MV 159KC		2. KSC TEST NUMBER V-30258	
3. EFFECTIVITY GSE			
4. TEST OBJECTIVES  TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE VALVE.			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY  PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY.  TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  <div style="text-align: center;"><u>TEST REQUIREMENTS</u></div>			
6. REV. DATE 2-14-68 DELETE NASA P/N 10437737-2 DISSIMILAR VALVE ADD 76K02549 SIMILAR VALVE. DELETE VENDOR P/N			
7. CONTRACTOR APPROVAL F. L. KUTCH		8. ORGANIZATION BATC-5-8534	
9. DATE NOVEMBER 13, 1967		10. NASA-KSC APPROVAL D. A. SCOVILLE	
11. ORGANIZATION LV-MEC-1		12. APPROVAL DATE 11/16/67	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M14551, 76K02549 SOLENOID VALVE, MAROTTA VALVE CORP. P/N 229654, MODEL MV159KC		2. KSC TEST NUMBER V-30258	
3. EFFECTIVITY GSE			
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 HOURS	
16. SUPPORT REQUIREMENTS GN2 GHE SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING EQUIPMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3996			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF DOUBLE ACTING PNEUMATIC CYLINDER, NASA P/N 75M06911, PNEUDRAULICS, INC., P/N 7091	2. KSC TEST NUMBER V-30274	3. EFFECTIVITY GSE
4. TEST OBJECTIVES To maintain, repair and functionally test the following cylinder:  <div style="display: flex; justify-content: space-between;"> <div>NASA P/N 75M06911</div> <div>VENDOR P/N 7091</div> </div>		
5. TEST DESCRIPTION, EQUIPMENT STATUS, CONFIGURATION  THIS TEST <u>XX</u> DOES <u>      </u> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test Parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  Phase <u>NA</u> <span style="float: right;"><u>NA</u></span>		
<div style="font-size: 4em; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>		
A 5-30-74 Cancelled - 501 & 502 Only		<div style="text-align: right;"> <i>5/3/74</i>  <i>J. O. Bissett</i>            Contractor Approval         </div> <div style="text-align: right;">           KSC Approval         </div>
6. TEST DATE <u>5-30-74</u>	8. ORGANIZATION BATC 5-8534	9. DATE <u>11/16/67</u>
7. TEST LOCATION 1. Newville	11. ORGANIZATION LV-NRC-1	12. APPROVAL DATE <u>11/16/67</u>

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF DOUBLE ACTING PNEUMATIC CYLINDER, NASA P/N 75M06911, PNEUDRAULICS, INC., P/N 7091		2. KSC TEST NUMBER V-30274
		3. EFFECTIVITY GSE
13. LOCATION VAB 1K11	14. COMPUTER PROC IDENTIFICATION NA	15. EST. TEST TIME 24 hours
16. SUPPORT REQUIREMENTS  GN2 GHe Spare Parts Special tools as required Cleaning requirement Functional test equipment Environmental controlled area		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-4027		
18. ITEM CONTINUATION		
<div style="font-size: 4em; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>															
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M05869, LBFV-3,-7,-9,-10 -11,-12,-13,-24; 75M14522, LBFV-3,-13 CRYOGENIC HANDLING BUTTERFLY VALVE, B. H. HADLEY, INC.		2. KSC TEST NUMBER V-30314															
		3. EFFECTIVITY GSE															
4. TEST OBJECTIVES  TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE VALVE.																	
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY.  PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY.  TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  <div style="text-align: center;"><u>TEST REQUIREMENTS</u> NA</div>																	
<table border="1"> <tr> <td>6. REV.</td> <td>DATE</td> <td>REASON</td> <td>FROM</td> <td>TITLE</td> <td>Contractor Approval</td> <td>KSC Approval</td> </tr> <tr> <td>A</td> <td>7-26-68</td> <td>ADD ADDITIONAL VALVES LBFV-7,-10,-12,-24 AND NASA P/N 75M14522 LBFV-3,-13. DELETE VENDOR P/N</td> <td></td> <td></td> <td><i>[Signature]</i></td> <td><i>[Signature]</i></td> </tr> </table>				6. REV.	DATE	REASON	FROM	TITLE	Contractor Approval	KSC Approval	A	7-26-68	ADD ADDITIONAL VALVES LBFV-7,-10,-12,-24 AND NASA P/N 75M14522 LBFV-3,-13. DELETE VENDOR P/N			<i>[Signature]</i>	<i>[Signature]</i>
6. REV.	DATE	REASON	FROM	TITLE	Contractor Approval	KSC Approval											
A	7-26-68	ADD ADDITIONAL VALVES LBFV-7,-10,-12,-24 AND NASA P/N 75M14522 LBFV-3,-13. DELETE VENDOR P/N			<i>[Signature]</i>	<i>[Signature]</i>											
7. CONTRACTOR APPROVAL <i>[Signature]</i> F. L. KUTCH		8. ORGANIZATION BATC 5-8534															
9. DATE NOVEMBER 13, 1967																	
10. NASA-KSC APPROVAL <i>[Signature]</i> D. A. SCOVILLE		11. ORGANIZATION LV-MEC-1															
12. APPROVAL DATE 11/16/67																	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M05869 LBFV-3,-7,-9,-10, -11,-12,-13,-24; 75M14522 LBFV-3, -13 CRYOGENIC HANDLING BUTTERFLY VALVE, B. H. HADLEY, INC.		2. KSC TEST NUMBER V-30314	
		3. EFFECTIVITY GSE	
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 HOURS	
16. SUPPORT REQUIREMENTS  GN2 GHE SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING EQUIPMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-4008			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, MANUALLY OPERATED ANGLE 6000 psig PNEUMATIC SYSTEM, AUTOCLAVE ENGINEERING COMPANY, P/N 20-7163, NASA P/N 75M05871 PAV-1, -3; 75M13208 PAV-1, -3		2. RSC TEST NUMBER V-30361	
3. TEST OBJECTIVES  To maintain, repair and functionally test the following valve:  NASA P/N 75M-05871-PAV-1, -3 75M13208 PAV-1, -3		4. EFFECTIVITY AS REQUIRED	
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  <u>Test Requirements</u> NA			
<div style="font-size: 4em; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>			
6. REV.	DATE	REASON	
B	5-30-64	Cancel - Requirement Deleted.	<i>P.H. Hume</i> 5/30/64
A	8-16-68	ADD PAD B COMP. 75M13208 PAV-1, -3 CHANGE EFFECTIVITY.	<i>J.A. Etting</i> 8/16/68
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE	10. KSC APPROVAL
<i>F.L. Kutch</i>	BATC 5-8534	11/15/67	
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE	
<i>D.A. Scoville</i>	LV-MEC-1	11/16/67	

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, GASEOUS NITROGEN SYSTEM, CALMEC MEG. CO., P/N C-188-B1, NASA P/N 75M51352		2. KSC TEST NUMBER V-30362
13. LOCATION VAB 1K 11		3. EFFECTIVITY GSE
14. COMPUTER PROC. IDENTIFICATION NA		19. EST. TEST TIME 24 hours
16. SUPPORT REQUIREMENTS  GN2 GHe Spare Parts Special tools as required Cleaning requirement Functional test equipment Environmentally controlled area		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6- BLGSEV-3516		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2															
1. TEST TITLE MAINTENANCE AND REPAIR OF PUMP, FIXED DISPLACEMENT, COMMERCIAL SHEARING & STAMPING CO., P/N P15H300BEYR10-16 NASA P/N 75M06350-1		2. KSC TEST NUMBER V-30369															
3. EFFECTIVITY GSE																	
4. TEST OBJECTIVES To maintain, repair and functionally test the following pump:  <div style="display: flex; justify-content: space-around;"> <div>NASA P/N 75M06350-1</div> <div>Vendor P/N P15H300BEYR10-16</div> </div>																	
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby  Prime test organization is Mechanical Systems Laboratory  Test parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging   <div style="text-align: center;"> <u>Test Requirements</u>              NA           </div>																	
<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>REASON</th> <th>Contractor Approval</th> <th>KSC Approval</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>8. ORGANIZATION BATC 5-8534</td> <td>9. DATE 11/15/67</td> <td></td> </tr> <tr> <td>2</td> <td></td> <td>10. ORGANIZATION LV-SEC-1</td> <td>12. APPROVAL DATE 11/16/67</td> <td></td> </tr> </tbody> </table>			REV	DATE	REASON	Contractor Approval	KSC Approval	1		8. ORGANIZATION BATC 5-8534	9. DATE 11/15/67		2		10. ORGANIZATION LV-SEC-1	12. APPROVAL DATE 11/16/67	
REV	DATE	REASON	Contractor Approval	KSC Approval													
1		8. ORGANIZATION BATC 5-8534	9. DATE 11/15/67														
2		10. ORGANIZATION LV-SEC-1	12. APPROVAL DATE 11/16/67														

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE MAINTENANCE AND REPAIR OF PUMP, FIXED DISPLACEMENT, COMMERCIAL SHEARING & STAMPING CO., P/N P15H300BEYR10-16 NASA P/N 75M06350-1		2. KSC TEST NUMBER V-30369
3. EFFECTIVITY GSE		
13. LOCATION VAB 1K 11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 hours
16. SUPPORT REQUIREMENTS  GN2 GHe Spare parts Special tools as required Cleaning requirement Functional test equipment Environmentally controlled area		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3529		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF LOX PNEUMATIC SYSTEM, REPUBLIC MFG. CO., 8193B Series, P/N 52CL8193B-6AS2 NASA P/N 75M05868		2. KSC TEST NUMBER V-30375
4. TEST OBJECTIVES  To maintain, repair and functionally test the following pneumatic system:  NASA P/N 75M05868  VENDOR P/N 52CL8193B-6AS2		3. EFFECTIVITY GSE
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test parts are    Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  <div style="text-align: center;"><u>Test Requirements</u> NA</div>		
6. REV.    DATE    TO CORRECT PART NUMBER		
7. CONTRACTOR APPROVAL <i>[Signature]</i> F.L. RICH		8. ORGANIZATION BATC 5-8534
10. NASA KSC APPROVAL <i>[Signature]</i> D.A. Scoville		11. ORGANIZATION LV-MEC-1
		9. DATE 11/15/67
		12. APPROVAL DATE 11/16/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF LOX PNEUMATIC SYSTEM, REPUBLIC MFG. CO., 8193B SERIES, P/N 52CL8193B-6AS2 NASA P/N 75M05868		2. KSC TEST NUMBER V-30375
3. EFFECTIVITY GSE		
13. LOCATION VAB 1K 11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 hours
16. SUPPORT REQUIREMENTS  GN2 GHe Spare parts Special tools as required Cleaning requirement Functional test equipment Environmentally controlled area		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3967		
18. ITEM CONTINUATION		



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, CHECK, 4" AND 6" HORIZONTAL SWING, FUEL SYSTEM, POWELL ENGINEERING COMPANY, SERIES 2433 SS NASA P/N 75M05867 FCV-2, -3 ; 75M14888 FCV-2, -3		2. KSC TEST NUMBER V-30383	
3. TEST OBJECTIVES To maintain, repair and functionally test the following valve:  NASA P/N 75M05867 FCV-2, -3 75M14888 FCV-2, -3		4. EFFECTIVITY AS REQUIRED	
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test Parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  <u>Test Requirements N/A</u>			
6. REV. DATE ADD PAD B COMPONENT 75M14888 FCV-2, -3 CHANGE EFFECTIVITY			
7. CONTRACTOR APPROVAL F. L. Kutch		8. ORGANIZATION BATC 5-8534	
9. APPROVAL DATE D. A. Scoville		10. APPROVAL DATE 11/15/67	
11. ORGANIZATION LV-MEC-1		12. APPROVAL DATE 11/16/67	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, CHECK, 4" AND 6" HORIZONTAL SWING, FUEL SYSTEM, POWELL ENGINEERING COMPANY, SERIES 2433 SS NASA P/N 75M05867 FCV-2, -3; 75,14888 FCV-2, -3		2. KSC TEST NUMBER V-30383
13. LOCATION VAB 1K 11	14. COMPUTER PROC. IDENTIFICATION NA	3. EFFECTIVITY AS REQUIRED
15. SUPPORT REQUIREMENTS  GN2 GHe Spare Parts Special tools as required Cleaning requirement Functional test equipment Environmental controlled area		16. EST. TEST TIME 24 hours
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3632		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1 TEST TITLE MAINTENANCE AND REPAIR OF VALVE, CHECK, HYDRAULIC, 3000 PSI HYDRAULIC SYSTEM, REPUBLIC MANUFACTURING COMPANY, MODEL NUMBER 458-32SS, NASA P/N 75M09007		2 KSC TEST NUMBER V-30387
3 EFFECTIVITY GSE		
4 TEST OBJECTIVES To maintain, repair and functionally test the following valve:  <div style="display: flex; justify-content: space-around;"> <div>NASA P/N 75M09007</div> <div>VENDOR P/N 458-32SS</div> </div>		
5 TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test Parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  <div style="text-align: right;"><u>Test Requirements NA</u></div>		
6 TEST DATE 11/15/67	7 TEST LOCATION BATC 5-0.04	8 ORGANIZATION LV-MEC-1
9 CONTRACTOR APPROVAL [Signature]		10 KSC APPROVAL [Signature]
11 DATE 11/15/67		12 APPROVAL DATE 11/16/67

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1 TEST TITLE MAINTENANCE AND REPAIR OF VALVE, CHECK, HYDRAULIC, 3000 PSI HYDRAULIC SYSTEM, REPUBLIC MANUFACTURING COMPANY, MODEL NUMBER 458-32SS, NASA P/N 75M09007		2 KSC TEST NUMBER V-30387
3 EFFECTIVITY GSE		
4 LOCATION VAB 1K 11	5 COMPUTER PROC IDENTIFICATION NA	6 TEST TEST TIME 24 hours
7 SUPPORT REQUIREMENTS GN2 GHe Spare Parts Special tools as required Cleaning requirement Functional test equipment Environmental controlled area		
8 OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3637		
9 ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, 1/2" MANUAL NEEDLE, RP-1 SYSTEM, DRAGON ENGINEERING CO., MODEL 816 NASA P/N 75M05867 FNV-3, 75M14888 FNV-3		2. KSC TEST NUMBER V-30393	
4. TEST OBJECTIVES  To maintain, repair and functionally test the following valve:  <div style="display: flex; justify-content: space-around;"> <div>NASA P/N 75M05867 FNV-3 75M14888 FNV-3</div> <div>VENDOR P/N Model 816</div> </div>		3. EFFECTIVITY AS REQUIRED	
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby  Prime test organization is Mechanical Systems Laboratory.  Test parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  <div style="text-align: center;"> <u>Test Requirements</u>               NA           </div>			
<div style="display: flex; justify-content: space-between;"> <div>           A 10-8-68            6. REV. DATE            7. CONTRACTOR APPROVAL  <i>F.L. Kutch</i>            F.L. Kutch            10. NASA-KSC APPROVAL  <i>D.A. Scoville</i>            D.A. Scoville         </div> <div>           ADD PAD B COMPONENT 75M14888 FNV-3, CHANGE            VENDOR P/N, EFFECTIVITY AND VALVE SIZE.            8. ORGANIZATION            BATC 5-8534            11. ORGANIZATION            LV-MEC-1         </div> <div> <i>J.A. Elling</i>            Contractor Approval            DATE            11/15/67            12. APPROVAL DATE            11/16/67         </div> <div> <i>D.A. Scoville</i>            KSC Approval         </div> </div>			

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, 1/2" MANUAL NEEDLE, RP-1 SYSTEM, DRAGON ENGINEERING CO., MODEL 816 NASA P/N 75M-5867 FNV-3, 75M14888 FNV-3		2. KSC TEST NUMBER V-30393	
13. LOCATION VAB 1K 11		14. COMPUTER PROC. IDENTIFICATION NA	
15. SUPPORT REQUIREMENTS  GN2 GHe Spare parts Special tools as required Cleaning requirement Functional test equipment Environmentally controlled area		16. TEST TIME 24 hours	
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3539-A			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF PUMP, LOX 1000 GPM, LIQUID OXYGEN SYSTEM, BYRON-JACKSON PUMPS, INC. P/N 1E-2779, NASA P/N 75M05869 LPM-6		2. KSC TEST NUMBER V-30404
4. TEST OBJECTIVES  To maintain, repair, and functionally test the following pump:  NASA P/N 75M05869 LPM-6		3. EFFECTIVITY GSE
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test Parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  Phase NA Test Requirements NA		
6. REV. <u>A</u> DATE <u>12/14/70</u> TO CORRECT NASA P/N & REFERENCE DOCUMENTATION <u>R.H. Adams</u> <u>12/14/70</u>		
7. CONTRACTOR APPROVAL <u>F. J. Kunch</u>	8. ORGANIZATION BATC 5-8534	9. DATE 11/15/67
10. NASA KSC APPROVAL <u>Donald A. Scoville</u> D.A. Scoville	11. ORGANIZATION LV-MEC-1	12. APPROVAL DATE 11/16/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF PUMP, LOX 1000 GPM, LIQUID OXYGEN SYSTEM, BYRON-JACKSON PUMPS, INC. NASA P/N 75M05869 LPM-6		2. KSC TEST NUMBER V-30404
13. LOCATION VAB 1K11		3. EFFECTIVITY GSE
14. COMPUTER PROC. IDENTIFICATION NA		15. EST. TEST TIME 24 hours
16. SUPPORT REQUIREMENTS  GN2 GHE Spare Parts Special Tools as required Cleaning requirement Functional Test equipment Environmental controlled area		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  V-30478 V-30046		
18. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, CHECK, 1/2 INCH, VACCO VALVE COMPANY, P/N CVT-3P-463P NASA P/N 75M05752 HCV-12		2. KSC TEST NUMBER V-30412
3. EFFECTIVITY GSE		
4. TEST OBJECTIVES  To maintain, repair and functionally test the following check valve:  <div style="display: flex; justify-content: space-between;"> <div>NASA P/N 75M05752 HCV-12</div> <div>VENDOR P/N CVT-3P-463P</div> </div>		
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test Parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging   <div style="text-align: right;"><u>Test Requirements NA</u></div>		
<div style="display: flex; justify-content: space-between;"> <div>6. REASON</div> <div>Contractor Approval</div> <div>KSC Approval</div> </div>		
7. CON <i>[Signature]</i>	8. ORGANIZATION BATC 5-8534	9. DATE 11/15/67
10. APPROVAL <i>[Signature]</i>	11. ORGANIZATION LV-MSC-1	12. APPROVAL DATE 11/16/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE MAINTENANCE AND REPAIR OF VALVE, CHECK, 1/2 INCH, VACCO VALVE COMPANY, P/N CVT-3P-463P NASA P/N 75M05752 HCV-12		4. KSC TEST NUMBER V-30412
13. LOCATION VAR 1K11		5. EFFECTIVITY GSE
14. COMPUTER PROC. IDENTIFICATION NA		10. EST. TEST TIME 24 hours
16. SUPPORT REQUIREMENTS  GN2 GHe Spare Parts Special tools as required Cleaning requirement Functional test equipment Environmental controlled area		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3855-A		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF CHECK VALVE, PNEUMATIC, HYDRO- PNEUMATIC SYSTEM, JAMES, POND, AND CLARK, INC., P/N 299T1-SERIES, NASA P/N 10430233	2. KSC TEST NUMBER V-30416	3. EFFECTIVITY GSE
4. TEST OBJECTIVES To maintain, repair, and functionally test the following valve.  NASA P/N 10430233  VENDOR P/N 299T1-SERIES		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test parts are - Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging  <u>Test Requirements</u>  NA		
6. REVIEW DATE		
7. CONTRACTOR APPROVAL  BATO 5-8534	8. SIGNATURE LATION	9. DATE 11/15/67
10. ORGANIZATION LV-MSC-1	12. APPROVAL DATE 11/16/67	

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF CHECK VALVE, PNEUMATIC, HYDRO- PNEUMATIC SYSTEM, JAMES, POND, AND CLARK, INC., P/N 299T1-SERIES, NASA P/N 10430233	2. KSC TEST NUMBER V-30416	3. EFFECTIVITY GSE
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 hours
16. SUPPORT REQUIREMENTS  GN2 GHe Spare Parts Special tools as required Cleaning requirement Functional test equipment Environmental controlled area		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3794		
18. ITEM CONTINUATION		

KSC FORM 22-226 (7/07)

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF REGULATOR, PRESSURE, NASA P/N 75M51364, 75M51383, 75M05871-PPRV-5 TESCOM CORPORATION, SERIES 26-1000		2. RSC TEST NUMBER V-30438
13. LOCATION VAB 1K11		3. EFFECTIVITY GSE
14. COMPUTER PROC. IDENTIFICATION NA		10. EST. TEST TIME 24 Hours
16. SUPPORT REQUIREMENTS  GN2 GHe Spare Parts Special Tools as required Cleaning Equipment Functional Test Equipment Environmentally Controlled Area		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3990, 3741, 3661		
18. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. MAINTENANCE AND REPAIR OF NASA P/N 75M12665-1 ACCUMULATOR, SWING ARM SYSTEMS AMERICAN BOSCH ARMA CORPORATION, P/N EHS41-591		2. KSC TEST NUMBER V-30446
		3. EFFECTIVITY GSE
4. TEST OBJECTIVES TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE ACCUMULATOR.		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY. PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY.  TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  <div style="text-align: center;"><u>TEST REQUIREMENTS</u> NA</div>		
6. REV.	DATE	ASON
7. CONTRACTOR APPROVAL <i>[Signature]</i>		8. ORGANIZATION BATC 5-8534
9. DATE NOVEMBER 15, 1967		10. APPROVAL D. A. SCOVILLE
11. ORGANIZATION LV-MEC-1		12. APPROVAL DATE 11/16/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M12665-1 ACCUMULATOR, SWING ARM SYSTEMS AMERICAN BOSCH ARMA CORPORATION P/N EHS41-591		2. KSC TEST NUMBER V-30446
		3. EFFECTIVITY GSE
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 HOURS
16. SUPPORT REQUIREMENTS GN <sub>2</sub> GHE SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING EQUIPMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3897		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M13285-2, -4 SOLENOID VALVE, MAROTTA VALVE CORPORATION P/N 229634-2, MODEL MV-130V		2. KSC TEST NUMBER V-30452
4. TEST OBJECTIVES MAINTENANCE, REPAIR AND FUNCTIONAL TESTING OF THE VALVE.		3. EFFECTIVITY GSE
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY. PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY. TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  TEST REQUIREMENTS NA		
<div style="text-align: center; font-size: 2em; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>		
B 7/11/70 DUPLICATE TO PAGE L-30237 A 1/20/63 To incorporate Rev. C of 75M13285		
6. DEV. DATE	REASON	Contractor Approval
7. CONTRACTOR APPROVAL F. C. KOTCH	8. ORGANIZATION BATC 5-8534	9. DATE NOVEMBER 15, 1967
10. NASA APPROVAL G. A. STOVILLE	11. ORGANIZATION LV-MEC-1	12. APPROVAL DATE 11/16/67

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M13285-2, -4 SOLENOID VALVE, MAROTTA VALVE CORPORATION P/N 229634-2, MODEL MV-130V		2. KSC TEST NUMBER V-30452
13. LOCATION VAB 1K11		3. EFFECTIVITY GSE
14. COMPUTER PROC. IDENTIFICATION NA		15. EST. TEST TIME 24 HOURS
16. SUPPORT REQUIREMENTS GN <sub>2</sub> GHE TEST PARTS SPECIAL TOOLS AS REQUIRED CLEANING EQUIPMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3916		
18. ITEM CONTINUATION		
<div style="text-align: center; font-size: 2em; transform: rotate(-15deg); opacity: 0.5;">CANCELLED</div>		



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KSC OPERATIONS APOLLO-SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M08814-1, -2 HYDRAULIC ACCUMULATOR, SERVICE ARM SYSTEM AMERICAN BOSCH-ARMA CORPORATION, P/N EHS41-414, -415		2. KSC TEST NUMBER V-30454
3. EFFECTIVITY GSE		
4. TEST OBJECTIVES TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE ACCUMULATOR.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY. PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY. TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  <div style="text-align: center;"><u>TEST REQUIREMENTS</u> NA</div>		
6. REV. DATE		REASON
7. CONTRACTOR APPROVAL F. L. BUTCH		8. ORGANIZATION BATC 5-8534
9. DATE NOVEMBER 15, 1967		10. NASA APPROVAL W. A. S. VILLE
11. ORGANIZATION LV-MEC-1		12. APPROVAL DATE 11/16/67

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APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M08814-1, -2 HYDRAULIC ACCUMULATOR, SERVICE ARM SYSTEM AMERICAN BOSCH-ARMA CORPORATION P/N EHS41-414, -415		2. KSC TEST NUMBER V-30454
3. EFFECTIVITY GSE		
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 HOURS
16. SUPPORT REQUIREMENTS GN2 GHE SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING EQUIPMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3919		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M09046 ACCUMULATOR ASSEMBLY, AMERICAN BOSH ARMA CORPORATION P/N EHS41-413		2. KSC TEST NUMBER V-30455
4. TEST OBJECTIVES TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE ACCUMULATOR.		3. EFFECTIVITY GSE
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY. PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY. TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  <div style="text-align: center;"><u>TEST REQUIREMENTS</u> NA</div>		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL F. L. KUTCH		8. ORGANIZATION BATC 5-8534
10. NASA-KSC APPROVAL D. A. SCOVILLE		11. ORGANIZATION LV-MEC-1
		9. DATE NOVEMBER 15, 1967
		12. APPROVAL DATE 11/16/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF NASA P/N 75M09046 ACCUMULATOR ASSEMBLY, AMERICAN BOSH ARMA CORPORATION P/N EHS41-413		2. KSC TEST NUMBER V-30455
		3. EFFECTIVITY GSE
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 HOURS
16. SUPPORT REQUIREMENTS  GN2 GHE SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING EQUIPMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 6-BLGSEV-3920		
18. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF 75M11877, FILTER AIRCRAFT POROUS MEDIA, P/N ACM 3105-410AX2		2. KSC TEST NUMBER V-30490
4. TEST OBJECTIVES  TO MAINTAIN, REPAIR AND FUNCTIONALLY TEST THE FOLLOWING FILTER  NASA P/N                      VENDOR P/N 75M11877                      ACM3105-410AX2		3. EFFECTIVITY GSE
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. IT IS CLASSED A STANDBY.  PRIME TEST ORGANIZATION IS MECHANICAL SYSTEMS LABORATORY.  TEST PARTS ARE - DISASSEMBLY INSPECTION CLEANING LUBRICATION REASSEMBLY FUNCTIONAL TEST PACKAGING  <div style="text-align: center;">TEST REQUIREMENTS NA</div>		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL <i>F. L. Kutch</i> F. L. KUTCH		8. ORGANIZATION BATC 5-8534
9. NASA KSC APPROVAL <i>D. A. Scoville</i> D. A. SCOVILLE		9. DATE 11/7/67 NOVEMBER 7, 1967
		10. ORGANIZATION LV-MEC-1
		12. APPROVAL DATE 11/27/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE MAINTENANCE AND REPAIR OF 75M11877, FILTER AIRCRAFT POROUS MEDIA, P/N ACM3105-410AXE		2. KSC TEST NUMBER V-30490
		3. EFFECTIVITY GSE
13. LOCATION VAB 1K11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 HOURS
16. SUPPORT REQUIREMENTS  GN2 GHe SPARE PARTS SPECIAL TOOLS AS REQUIRED CLEANING REQUIREMENT FUNCTIONAL TEST EQUIPMENT ENVIRONMENTALLY CONTROLLED AREA		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION NONE		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE MAINTENANCE AND REPAIR OF MANIFOLD ASSEMBLY, ANDERSON GREENWOOD & CO., P/N M6AVS-4, NASA P/N 75M04676 NMAB-1		2. KSC TEST NUMBER V-30910
3. EFFECTIVITY As required		
4. TEST OBJECTIVES  To maintain, repair and functionally test the following manifold assembly:  <div style="display: flex; justify-content: space-around;"> <div>NASA P/N 75M04676 NMAB-1</div> <div>Vendor P/N M6AVS-4</div> </div>		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a standby.  Prime test organization is Mechanical Systems Laboratory.  Test parts are: Disassembly Inspection Cleaning Lubrication Reassembly Functional Test Packaging   <div style="text-align: right;"><u>Test Requirements NA</u></div>		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL <i>F.L. Kutch</i> F.L. Kutch	8. ORGANIZATION nATC 5-8534	9. DATE 11/27/67
10. NASA-KSC APPROVAL <i>D.A. Seoville</i> D.A. Seoville	11. ORGANIZATION LV-MEC-1	12. APPROVAL DATE 6 Dec 67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE MAINTENANCE AND REPAIR OF MANIFOLD ASSEMBLY, ANDERSON GREENWOOD & CO., P/N M6AVS-4, NASA P/N 75M04676 NMAB-1		2. KSC TEST NUMBER V-30910
3. EFFECTIVITY As required		
13. LOCATION VAB 1K 11	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME 24 hours
16. SUPPORT REQUIREMENTS  GN2 GHe Spare parts Special tools as required Functional test equipment Cleaning requirement Environmental controlled area		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  6-BLGSEV-3893		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. SYMBOLICAL CABLE INSTALLATION		KSC TEST NUMBER V-31011
		AS-206 & SUBS AS-512 & SUBS
2. GUIDELINES FOR PROPERLY CONNECTING UMBILICAL CABLES TO THE UMBILICAL HEAD AND VERIFYING GROUND STRAP CONNECTIONS.		
3. THIS TEST <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
4. UMBILICAL HEAD WILL BE MATED TO VEHICLE PRIOR TO CONNECTION OF UMBILICAL CABLES. 10. GROUND POWER WILL BE OFF DURING UMBILICAL CONNECTION. UMBILICAL CABLES WILL BE UNCAPPED AND SCREWED INTO UMBILICAL HEAD ASSEMBLY. ALSO CONNECT AND VERIFY GROUND STRAP CONNECTIONS.		
5. CONFIGURATION: 10 MUST BE STACKED.		
TEST REQUIREMENTS MSFC: TM-011-001-2H 13.1ml.1.1		
6. 10/1/66	REVISE MSFC REQUIREMENTS	<i>[Signature]</i>
7. 10/7/66	REVISED BLOCKS 18	<i>[Signature]</i>
8. 10/11/66	REVISE BLOCKS 3, 8, 13, 16 AND 17	<i>[Signature]</i>
9. 10/11/66	Update Effectivity from AS-206 & SUBS	<i>[Signature]</i>
10. 10/11/66	UPDATED PHASE AND DELETED MSFC REQUIREMENTS.	<i>[Signature]</i>
11. 10/11/66	REASON K73	Contractor Approval <i>[Signature]</i> KSC Approval <i>[Signature]</i>
12. 10/11/66	DATE 22 SEPTEMBER 1967	
13. 10/11/66	APPROVAL DATE 17 OCTOBER 1967	
14. 10/11/66	ORGANIZATION LV-GDC-25	

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE 10 UMBILICAL CABLE INSTALLATION		
2. LOCATION VAB/LC-39A, B		
3. COMPLETION TIME N/A		
4. SUPPORT REQUIREMENTS INTERSTAGE: NONE OFF-COMPLEX: NONE ON-COMPLEX: IBM QUALITY IBM MECHANICAL IBM VEHICLE NETWORKS		
5. OTHER APPLICABLE REQUIREMENTS SEE BLOCK 18, BELOW		
6. ITEM CONTINUATION REFERENCE DOCUMENTATION		
	512 & SUBS	206 & SUBS
CABLE INSTALLATION DWG	40M12378	40M07806
AESS CID	79091XX	79105XX
FORWARD SERVICE ARM	75M08727	75M08725
HOUSING ASSEMBLY DWG	11200001-1	11200004-1
10 CABLE INSTALLATION SPECS.	7907387	7907387



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE GSCU POWER UP/DOWN		2. KSC TEST NUMBER V-31108	
		3. EFFECTIVITY AS-209 & SUBS	
4. TEST OBJECTIVES TO BRING THE GSCU & FCVB UP TO AN OPERATING CONDITION USING GROUND POWER OR POWER SUPPLIES. TO POWER DOWN THE GSCU & FCVB USING GROUND POWER OR POWER SUPPLIES.			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THE GSCU(S) ARE LOCALLY OPERATED TO VERIFY PRESSURES, FLOWS AND TEMPERATURES ARE WITHIN LIMITS. IF THE GSCU(S) ARE TO BE REMOTELY OPERATED, CONTROLS ARE POSITIONED FOR REMOTE OPERATION. ADDITIONAL OPERATIONS FOR SET-UP OF OTHER EQUIPMENT IS INCLUDED WHEN GETTING READY FOR STAGE POWER.  SECURING STEPS POSITION CONTROLS SUCH THAT THE GSCU(S) ARE IN A STANDBY CONFIGURATION. CONFIGURATION: INSTALLED ON LUT  PHASE: II, III, IV, V, VI  <u>TEST REQUIREMENTS</u> MSFC: 0.3.5.2.3.2 0.3.5.2.3.4			
6. REV.	DATE	REASON	DATE
1	10-2-67	REVISED BLOCKS 3, 4 & 17	10-2-67
2	10-1-67	REVISED BLOCKS 3, 4, AND 5	10-1-67
3	10-7-71	CHANGE BLOCKS 3, 5, 13, 16 & 17	10-7-71
4	1-5-71	CHANGE PREFIX FROM "IV" TO "V" AND BLOCK 15	1-5-71
7. APPROVAL		8. ORGANIZATION	
S/P. W. SCHMID		IBM - K73	
9. DATE		10. DATE	
4 OCTOBER 1967		10-9-67	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE GSCU POWER UP/DOWN		2. KSC TEST NUMBER V-31108	
		3. EFFECTIVITY AS-209 & SUBS	
13. LOCATION LC 39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 1 MAN - 1.5 HRS. TOTAL	
16. SUPPORT REQUIREMENTS  INTERSTAGE: NONE OFF-COMPLEX: NONE ON-COMPLEX: IBM QUALITY ASSURANCE IBM MECHANICAL FACILITY 440 VAC			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION MSFC-MAN-008 V-36038			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE LUT NETWORKS JUMPER/SIMULATOR INSTALLATION AND REMOVAL		2. KSC TEST NUMBER V-31109	
		3. EFFECTIVITY GSE	
4. TEST OBJECTIVES  TO PROVIDE A UNIFORM METHOD TO IDENTIFY, INSTALL, CHECKOUT AND REMOVE FUSED TEST JUMPERS AND SIMULATORS FOR LUT ELECTRICAL NETWORKS SUPPORT OF LCC INTEGRATION TESTING.			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS PROCEDURE WILL:  A. IDENTIFY FUSED TEST JUMPERS AS TO FUSE SIZE, PATCH RACKS AND JACK/PIN REQUIREMENTS. INSTALL AND CHECK FOR CONTINUITY AND INDICATE APPROPRIATE TIME FOR REMOVAL OF JUMPERS.  B. IDENTIFY SPECIFIC REQUIREMENTS FOR INSTALLING SIMULATORS/ BREAKOUT BOXES AND THEIR REMOVAL.			
6. REV. DATE REASON			
7. COM		Contractor Approval KSC Approval	
8. ORGANIZATION BATC 5-8513		9. DATE 2/30/71	
11. ORGANIZATION LV-GDC-24		12. APPROVAL DATE 2/30/71	

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE LUT NETWORKS JUMPER/SIMULATOR INSTALLATION AND REMOVAL		2. KSC TEST NUMBER V-31109	
		3. EFFECTIVITY GSE	
13. LOCATION ML	14. COMPUTER PROC. IDENTIFICATION NA	15. EST. TEST TIME ONE HOUR	
16. SUPPORT REQUIREMENTS  NA			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE SIB STAGE, ESE AND LSE ELECTRICAL PREPARATIONS AND POST TEST OPERATIONS FOR BACKUP GUIDANCE SIMULATION FLIGHT TEST AND FRT		2. KSC TEST NUMBER V-31133
3. EFFECTIVITY 206 & Subs		
4. TEST OBJECTIVES  TO CONFIGURE THE SIB STAGE, ESE, LSE ELECTRICAL AND PERFORM POST TEST OPERATIONS IN SUPPORT OF BACKUP GUIDANCE SIMULATION FLIGHT TEST AND FLIGHT READINESS TEST.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  <u>Section A - Test Requirements</u>  <u>Section B - Preparations</u>  Prepares the SIB Stage, ESE, and LSE Electrical for BUGS and FRT.  <u>Section C - Securing</u>  Performs those steps necessary for securing the SIB Stage, ESE, and LSE Electrical from FRT.		
A 2-5-73 Changes TCP Format		Contractor Approval <i>[Signature]</i> KSC Approval <i>[Signature]</i>
6. REVIEW DATE	REASON	9. DATE
7. ORGANIZATION APPROVAL V. M. BROWN	8. ORGANIZATION CCSD	9. DATE 9-22-72
10. ORGANIZATION APPROVAL R.W. Richie for R.P. Clay C.E. Overstreet	11. ORGANIZATION LV-GDC-24 LV-GDC-22	12. APPROVAL DATE 9-22-72

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE SIB STAGE, ESE, AND LSE ELECTRICAL PREPARATIONS AND POST TEST OPERATIONS FOR BACKUP GUIDANCE SIMULATION FLIGHT TEST AND FRT.		2. KSC TEST NUMBER V-31133
3. EFFECTIVITY 206 & Subs		4. EST. TEST TIME 4 Days
13. LOCATION LC-39	14. COMPUTER PROC. IDENTIFICATION N/A	
15. SUPPORT REQUIREMENTS  Skylab KPRD 20002 Skylab KPRD 21006		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION V-20120 - SV Flight Readiness Test V-20119 - LV Backup Guidance Simulation Flight Test		
18. ITEM CONTINUATION		



APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE <b>CERTIFICATION OF S-IB HYDRAULIC SERVICER</b>		2. MSC TEST NUMBER <b>V-33037</b>
3. EFFECTIVITY <b>206 &amp; Subs</b>		
13. LOCATION <b>F.C. Lab</b>	14. COMPUTER PROG. IDENTIFICATION <b>N/A</b>	15. EST. TEST TIME <b>1.0 Hour</b>
16. ADDITIONAL COMMENTS  <b>NONE</b>		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION  <b>NONE</b>		
18. ITEM CONTINUATION		

KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE <b>CERTIFICATION OF S-IB HYDRAULIC SERVICER</b>		2. MSC TEST NUMBER <b>V-33037</b>
3. EFFECTIVITY <b>206 &amp; Subs</b>		
4. TEST OBJECTIVES  <b>TO VERIFY THAT THE S-IB HYDRAULIC SERVICER IS FUNCTIONALLY OPERATIVE PRIOR TO ITS USE IN FLIGHT CONTROL LABORATORY CHECKOUT.</b>		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION  <b>THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</b>		
1. The unit is visually inspected for any physical damage or major hydraulic leaks.  2. The unit is activated and the test actuators are stroked, using the portable substitute computer, to verify proper system operation.		
<b>CONFIGURATION: LABORATORY TEST.</b>		
<b>TEST REQUIREMENTS: MSFC - N/A</b>		
A	6-28-72	Effectivity Change per TI-2-17, Rev. F
4. REV.	DATE	REASON
7. CONTRACTOR APPROVAL <i>D. Stewart/W.O. Brown</i>		8. ORGANIZATION <b>CCSD</b>
10. NASA-KSC APPROVAL <i>George W. Ely</i>		11. ORGANIZATION <b>LV-GDC-33</b>
		9. DATE <b>10-11-71</b>
		12. APPROVAL DATE <b>10/20/71</b>

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
S-IB FLIGHT CONTROL PRE-OPERATIONAL AND SECURING PROCEDURE		4. KSC TEST NUMBER V-33038 5. EFFECTIVITY 206 & SUBS
<p>PREPARE S-IB FLIGHT CONTROL HYDRAULIC &amp; RECORDING SYSTEM (S) FOR OPERATION.</p> <p>SECURE S-IB FLIGHT CONTROL HYDRAULIC AND RECORDER SYSTEM (S).</p>		
<p>TEST DESCRIPTION (EQUIPMENT STATUS CONFIGURATION)</p> <p>THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <ol style="list-style-type: none"> <li>Visual inspection of hydraulic actuators and associated hardware.</li> <li>Prepare hydraulic System(s) for operation.</li> <li>Stabilize the Flight Control recorders, calibrate, set sensitivity and speed.</li> <li>Prepare display and control console for hydraulic system (s) control and monitoring.</li> <li>Secure hydraulic system (s) actuators, flight control recorders, and display and control console.</li> </ol> <p>CONFIGURATION: Vehicle in vertical position.</p> <p>TEST REQUIREMENTS: MSFC - N/A</p>		
MINOR EFFECTIVITY		<p>Contractor Approval: <i>[Signature]</i> H.W. Ely</p> <p>KSC Approval: <i>[Signature]</i></p>
1. DATE	2. REASON	3. DATE
4. CONTRACTOR APPROVAL A. Petro W.O. Brown	5. ORGANIZATION CCSD	10-4-71
6. NASA/KSC APPROVAL DATE	7. ORGANIZATION	12. APPROVAL DATE
11/20/71	LV-GDC-33	10/20/71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE S-IB FLIGHT CONTROL PRE-OPERATIONALD AND SECURING PROCEDURE		2. KSC TEST NUMBER V-33038
13. LOCATION LC-39 FR#3, HB-1		14. COMPUTER PROC IDENTIFICATION N/A
16. SUPPORT REQUIREMENTS		15. EST TEST TIME 1.0 Hour
<ol style="list-style-type: none"> <li>Ground power</li> <li>S-IB Stage Power</li> <li>LCC Measuring</li> <li>DDAS</li> <li>RCA-110A</li> <li>S-IB Vehicle Mechanical</li> </ol>		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION NONE		
18. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
TEST TITLE S-IB FLIGHT CONTROL SYSTEM PREPARATIONS AND SECURING OPERATIONS FOR OVERALL TESTS		2. ASC TEST NUMBER V-33039
		3. EFFECTIVITY 206 & SUBS
<p>VERIFY PREPARATIONS AND SECURING OPERATIONS FOR VEHICLE SYSTEMS OVERALL TESTS ARE COMPLETE.</p>		
<p>THIS TEST <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p>		
<p>1. VERIFY ALL CABLING AND CONNECTIONS TO HYDRAULIC ACTUATORS AND SUBASSEMBLIES.</p> <p>2. PREPARE S-IB HYDRAULIC ACTUATOR SYSTEMS FOR OPERATION.</p> <p>3. CALIBRATE AND READY THE FLIGHT CONTROL RECORDERS FOR OPERATION.</p> <p>4. PREPARE THE DISPLAY CONTROL CONSOLE FOR OPERATION.</p> <p>5. SECURE HYDRAULIC SYSTEMS ACTUATORS, FLIGHT CONTROL RECORDERS AND THE DISPLAY CONTROL CONSOLE.</p>		
<p>CONFIGURATION: VEHICLE IN VERTICAL POSITION.</p>		
<p>TEST REQUIREMENTS: MSFC - N/A</p>		
4. EFFECTIVITY		<p>Contractor Approval: <i>[Signature]</i></p> <p>KSC Approval: <i>[Signature]</i></p>
5. REV. DATE	REASON	9. DATE
6. CONTRACTOR APPROVAL <i>[Signature]</i>	7. ORGANIZATION CCSD	10-X-71
8. NASA/KSC APPROVAL <i>[Signature]</i>	11. ORGANIZATION LV GDC-33	12. APPROVAL DATE 10/20/71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE S-IB FLIGHT CONTROL SYSTEM PREPARATIONS AND SECURING OPERATIONS FOR OVERALL TESTS		2. ASC TEST NUMBER V-33039
		3. EFFECTIVITY 206 & SUBS
13. LOCATION LC-39	14. COMPUTER PROG. IDENTIFICATION N/A	15. EST. TEST TIME 1.0 Hour
<p>16. SUPPORT REQUIREMENTS</p> <ol style="list-style-type: none"> <li>1. Ground Power</li> <li>2. S-IB Stage Power</li> <li>3. IU Power</li> <li>4. LCC Measuring</li> <li>5. DDAS</li> <li>6. S-IB Vehicle Mechanical</li> </ol>		
<p>17. OTHER APPLICABLE REFERENCE DOCUMENTATION</p> <p>NONE</p>		
<p>18. ITEM CONTINUATION</p>		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER V-33053	
S-IC STAGE ACTUATOR LOCKS REMOVAL AND INSTALLATION	3. EFFECTIVITY 503 and Subs	
4. TEST OBJECTIVES		
To perform locks removal or installation of the S-IC Stage Actuator Locks using manual methods		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION		
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. It is classed a subtask.		
Prime test organization is S-IC Stage.		
Instructions shall be provided for removal and installation of S-IC stage servoactuator locks using manual engine actuators or manpower. Provisions shall be made for performing locks installation or removal with thermal insulation boots and bellows installed or not installed.		
<u>Test Requirements</u> MSFC: NA		
6. REV.	DATE	RFA, U.S. Contractor Approval KSC Approval
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
W.E. Estes/C.W. Tucker	BATC 5-8521/5-8531	11/29/67
10. NASA APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
R. Newall	LV-MEC-23	12-1-7

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
S-IC STAGE ACTUATOR LOCKS REMOVAL AND INSTALLATION	V-33053	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	3. EFFECTIVITY
VAB, Pad	NA	503 and Subs
15. EST. TEST TIME		16. SUPPORT REQUIREMENTS
4 hours		Engine servicing platform
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
18. ITEM CONTINUATION		



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE MECHANICAL SYSTEMS SUPPORT OF IU STAGE POWER		2. KSC TEST NUMBER V-34017	
3. TEST OBJECTIVES PROVIDES SEQUENCED STEPS TO APPLY IU MECHANICAL SYSTEM POWER MANUALLY OR PER LOA1. OPERATES THE IU COOLING SYSTEM WITH MANUAL OR LAM1 CONTROL. GAS BEARING SUPPLY SYSTEM MAY ALSO BE OPERATED MANUALLY OR UNDER CONTROL OF LAM1. FUNCTIONAL TESTING MAY BE PERFORMED UNDER CONTROL OF LAM2.		3. EFFECTIVITY AS-206 & SUBS	
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS. THIS TEST IS DIVIDED INTO FOUR PARTS: PART I: NORMAL SUPPORT (LA01, LAM1, LAM2) PART II: SYSTEMS MONITORING PART III: MANUAL OPERATIONS PART IV: EMERGENCY STEPS CONFIGURATION: VEHICLE STACKED, UMBILICAL CONNECTED PHASE: III, IV, V, VI  TEST REQUIREMENTS MSFC: 7921601 0.3.5.1.1.2 ✓ 0.3.5.2.0 ✓ 0.3.5.2.2.1.1 ✓ 0.3.5.2.3.1 ✓ 0.3.5.2.4.1 ✓ 0.3.5.2.4.3 ✓ 0.3.5.2.4.4 ✓ 0.3.5.2.7.1.1 ✓ 0.3.5.5.2 ✓ TM-011-001-2H B.1.7.1.2 ✓ B.3.0.1.6 ✓ B.14.0.4.1.1 ✓ B.1.7.1.1 ✓			
E	8-6-4	REVISED BLOCKS 3, 4, 5, 14 AND 17	<i>W.B. Hunt</i>
D	4-19-2	REVISED BLOCKS 3, 5, 16 & 17	G.E. LECKIE
C	12-20-1	REVISE MSFC REQUIREMENTS	G.E. LECKIE
B	9-10-1	REVISE MSFC REQUIREMENTS, RETITLE PARTS I - IV	W.B. HUNT
A	1-8-70	REVISE MSFC REQUIREMENTS	J.C. PEURRUNG
4. REV.	DATE	REASON	Contractor Approval
7. CONTRACTOR APPROVAL S/J.C. PEURRUNG		8. ORGANIZATION IBM - K73	9. DATE AUGUST 28, 1969
5. NASA KSC APPROVAL S/P.W. SCHMID		11. ORGANIZATION LV-MEC-25	12. APPROVAL DATE AUGUST 28, 1969

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE MECHANICAL SYSTEMS SUPPORT OF IU STAGE POWER		2. KSC TEST NUMBER V-34017	
3. EFFECTIVITY AS-206 & SUBS		15. EST. TEST TIME 2 MEN - 8 HOURS	
13. LOCATION VAB, LC39A, B, C	14. COMPUTER PROC. IDENTIFICATION LAM1, LAM2, LA01		
16. SUPPORT REQUIREMENTS INTERSTAGE: NONE OFF-COMPLEX: NONE ON-COMPLEX: OIS HIGH PRESSURE GAS (6000 PSI) 750 PSI GN2 IU QUALITY ASSURANCE IBM MECHANICAL			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION MSFC-MAN-014 20Z42212 V-31108 MSFC-MAN-008 V-21223 7921601 MSFC-MAN-036 V-36038 TM-011-001-2H			
18. ITEM CONTINUATION			



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE INSTALLATION AND REMOVAL, LOX TANK SUMP, DSV-4B STAGE		2. KSC TEST NUMBER V-34030
		3. EFFECTIVITY As Required
4. TEST OBJECTIVES THE OBJECT OF THIS PROCEDURE IS TO INSURE THAT THE LO <sub>2</sub> TANK SUMP AND ANTI-VORTEX SCREEN ASSEMBLY INSTALLATION AND/OR REMOVAL IS ACCOMPLISHED IN THE PROPER SEQUENCE AND UNDER SPECIFIED CLEAN CONDITIONS.		
5. TEST DESCRIPTION EQUIPMENT STATUS/CONFIGURATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  SPECIFIES THE PROCEDURE TO BE USED TO INSTALL AND/OR REMOVE THE LIQUID OXYGEN TANK SUMP AND THE ANTI-VORTEX OXIDIZER SCREEN AND DIFFUSER ASSEMBLY. PROCEDURE ENSURES THAT SYSTEM CLEANLINESS IS MAINTAINED.  THIS PROCEDURE MAY BE ACCOMPLISHED IN EITHER THE VAB LOW BAY, VAB HIGH BAY, OR AT THE LAUNCH PAD.  THE STAGE MAY BE IN EITHER THE VERTICAL OR HORIZONTAL POSITION. LOX AND LH <sub>2</sub> TANKS MUST BE VENTED TO AMBIENT. X-RAY PORTION MUST BE PERFORMED WITH STAGE IN VERTICAL POSITION AFTER FINAL ERECTION.		
TEST REQUIREMENTS:  MSFC TR N/A		
C 10-20-71 CHANGE RD NUMBER		<i>[Signature]</i>
B 10-28-71 REVISED KSC TEST NO. V-34030 WAS O-IV-34030		<i>[Signature]</i>
A 10-27-71 REVISED KSC TEST NO. V-34030 WAS O-IV-34030		<i>[Signature]</i>
6. REV. DATE	REASON	Contractor Approval: KSC Approval
7. CONTRACTOR APPROVAL /S/P. W. MILES FOR M. C. PIERCE	8. ORGANIZATION DOUGLAS	9. DATE 11-20-7
10. KSC APPROVAL /S/M. C. MURPHY	11. ORGANIZATION LV-MEC-24	12. APPROVAL DATE 11-27-7

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE INSTALLATION AND REMOVAL, LOX TANK SUMP, DSV-4B STAGE		2. KSC TEST NUMBER V-34030
		3. EFFECTIVITY As Required
13. LOCATION VAB, LC 39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 8 Hours
16. SUPPORT REQUIREMENTS  SID-34030-D 40090-2V		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION DAC DRAWING 1B57687 DAC DRAWING 1B62406		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>							
1. TEST TITLE IU LIGHT COMPONENT INSTALLATION & REMOVAL		2. KSC TEST NUMBER V-34045							
		3. EFFECTIVITY SL-206 & SUBS AS-512 & SUBS							
4. TEST OBJECTIVES TO INSTALL OR REMOVE COMPONENTS IN THE INSTRUMENT UNIT.									
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION <p>THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>LIGHT COMPONENTS ARE HAND CARRIED INTO THE IU (USING HARNESS OR TRANSPORTER BAG) POSITIONED, AND MOUNTING HARDWARE IS INSTALLED AND TORQUED. REMOVAL IS ACCOMPLISHED BY REVERSING PROCEDURE FOR INSTALLING.</p> <p>CONFIGURATION: VEHICLE EITHER STACKED OR IU DEMATED IN RECEIVING AREA.</p> <p>PHASE: II, III, IV, V, VI</p> <p style="text-align: center;">TEST REQUIREMENTS</p> <table border="0"> <tr> <td>206 AND SUBS</td> <td>512 AND SUBS</td> </tr> <tr> <td>MSFC: 7921601</td> <td>MSFC: 7916404</td> </tr> <tr> <td>0.3.3.1.1</td> <td>0.3.3.1.1</td> </tr> </table>				206 AND SUBS	512 AND SUBS	MSFC: 7921601	MSFC: 7916404	0.3.3.1.1	0.3.3.1.1
206 AND SUBS	512 AND SUBS								
MSFC: 7921601	MSFC: 7916404								
0.3.3.1.1	0.3.3.1.1								
C	4/19/72	REVISED BLOCKS 3, 5, 16 & 17	<i>[Signature]</i>						
B	6-4-71	CHANGED PREFIX FROM "IV" TO "V"	<i>[Signature]</i>						
A	1/7/70	REVISED MSFC REQUIREMENTS - BLOCKS 5 & 17	<i>[Signature]</i>						
6. REV.	DATE	REASON	Contractor Approval      KSC Approval						
7. CONTRACTOR APPROVAL S/W. B. HUNT		8. ORGANIZATION IBM - 906	9. DATE OCTOBER 2, 1967						
10. NASA/KSC APPROVAL S/ P. W. SCHMID		11. ORGANIZATION JD-25	12. APPROVAL DATE OCTOBER 6, 1967						

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE IU LIGHT COMPONENT INSTALLATION & REMOVAL		2. KSC TEST NUMBER V-34045	
		3. EFFECTIVITY SL-206 & SUBS 512 & SUBS	
13. LOCATION LC 39A, B, C	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME	
16. SUPPORT REQUIREMENTS <p>INTERSTAGE REQUIREMENTS: N/A</p> <p>OFF-COMPLEX SUPPORT: N/A</p> <p>ON-COMPLEX SUPPORT: IBM QUALITY ASSURANCE IU VEHICLE ELECTRICAL NETWORKS IBM MECHANICAL</p>			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION 10Z22501 (SAT V) 7921601 7916404 10Z22204 (SAT IB)			
18. ITEM CONTINUATION			

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 of 2	
1. TEST TITLE IU ACCESS DOOR INSTALLATION & REMOVAL		2. KSC TEST NUMBER V-34046	
		3. EFFECTIVITY AS-205 & SUBS	
4. PURPOSE TO INSTALL OR REMOVE THE INSTRUMENT UNIT ACCESS DOOR.			
5. PRELIMINARY EQUIPMENT STATUS AND LOCATION THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.			
THIS JOB TASK IS DIVIDED INTO TWO PARTS:			
A. THE ACCESS DOOR IS INSTALLED BY POSITIONING IT IN THE OPENING AND UPPER AND LOWER SPLICE PLATES ARE INSTALLED. THE DOOR HANDLES ARE REMOVED AND LEFT AND RIGHT SIDE SPLICE PLATES ARE INSTALLED, THEN ATTACHING HARDWARE IS TIGHTENED. OVER/SEGMENT SPLICE PLATE IS INSPECTED FOR STRESS CORROSION PRIOR TO AND FOLLOWING INSTALLATION.			
B. THE DOOR IS REMOVED BY REVERSING THE SEQUENCE FOR INSTALLATION.			
CONFIGURATION: VEHICLE STACKED OR IU IN STORAGE AREA.			
PHASE: II, V, VI			
TEST REQUIREMENTS			
MOPC: 7921601 0.3.3.1.1 0.3.3.2.1.1			
6. TEST PLAN	7. TEST RESULTS	8. TESTER	9. DATE
10. TEST PLAN	11. TEST RESULTS	12. TESTER	13. DATE
14. TEST PLAN	15. TEST RESULTS	16. TESTER	17. DATE
18. TEST PLAN	19. TEST RESULTS	20. TESTER	21. DATE
22. TEST PLAN	23. TEST RESULTS	24. TESTER	25. DATE
26. TEST PLAN	27. TEST RESULTS	28. TESTER	29. DATE
30. TEST PLAN	31. TEST RESULTS	32. TESTER	33. DATE
34. TEST PLAN	35. TEST RESULTS	36. TESTER	37. DATE
38. TEST PLAN	39. TEST RESULTS	40. TESTER	41. DATE
42. TEST PLAN	43. TEST RESULTS	44. TESTER	45. DATE
46. TEST PLAN	47. TEST RESULTS	48. TESTER	49. DATE
50. TEST PLAN	51. TEST RESULTS	52. TESTER	53. DATE
54. TEST PLAN	55. TEST RESULTS	56. TESTER	57. DATE
58. TEST PLAN	59. TEST RESULTS	60. TESTER	61. DATE
62. TEST PLAN	63. TEST RESULTS	64. TESTER	65. DATE
66. TEST PLAN	67. TEST RESULTS	68. TESTER	69. DATE
70. TEST PLAN	71. TEST RESULTS	72. TESTER	73. DATE
74. TEST PLAN	75. TEST RESULTS	76. TESTER	77. DATE
78. TEST PLAN	79. TEST RESULTS	80. TESTER	81. DATE
82. TEST PLAN	83. TEST RESULTS	84. TESTER	85. DATE
86. TEST PLAN	87. TEST RESULTS	88. TESTER	89. DATE
90. TEST PLAN	91. TEST RESULTS	92. TESTER	93. DATE
94. TEST PLAN	95. TEST RESULTS	96. TESTER	97. DATE
98. TEST PLAN	99. TEST RESULTS	100. TESTER	101. DATE

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET 2		PAGE 1 of 2	
1. TEST TITLE IU ACCESS DOOR INSTALLATION & REMOVAL		2. KSC TEST NUMBER V-34046	
		3. EFFECTIVITY AS-205 & SUBS	
4. LOCATION MC 39A, B, C	5. COMPUTER PROGRAM IDENTIFICATION N/A	6. TEST TIME 2 MEN - 1 HOUR	
7. SUPPORT REQUIREMENTS			
INTERSTAGE REQUIREMENTS: N/A			
OFF-COMPLEX SUPPORT: N/A			
ON-COMPLEX SUPPORT: IBM QUAL ASSURANCE IBM MECHANICAL			
8. OTHER APPLICABLE REFERENCE DOCUMENTATION			
30213109 7910574 30213112 30213104 7921601			
9. ITEM CONTINUATION			



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REV B2

APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1. TEST TITLE		2. KSC TEST NUMBER	
IU HEAVY COMPONENT INSTALLATION AND REMOVAL		V-34047	
3. EFFECTIVITY		AS-206 & SUBS	
4. TEST OBJECTIVES			
<p>1. TO INSTALL OR REMOVE THE FOLLOWING COMPONENTS:</p> <p>LVDA, LVDC, ST-124 PLATFORM, FCC, BATTERIES, POWER DISTRIBUTOR, PLATFORM ELECTRONIC ASSY.</p>			
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION			
<p>THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>COMPONENTS ARE TRANSPORTED TO THE IU ON THEIR HANDLING FIXTURES. COOLANT CAVITIES OF INDIVIDUALLY COOLED COMPONENTS ARE FILLED WITH COOLANT FROM THE SSCU (IF THE IU TCS IS IN CLOSED LOOP CONFIGURATION) AND TRANSFERRED TO THE COMPONENT HANDLING EQUIPMENT HOIST IN THE IU. THE COMPONENT IS POSITIONED AND MOUNTING HARDWARE IS INSTALLED AND TORQUED. ADDITIONAL CONNECTIONS ARE COMPLETED, AND THE HOIST IS REMOVED FROM THE IU.</p> <p>REMOVAL IS ACCOMPLISHED BY REVERSING THE PROCEDURE.</p> <p>CONFIGURATION: VEHICLE STACKED.</p> <p>PHASE: III, IV, V, VI</p>			
TEST REQUIREMENTS			
<p>MSFC: 7921601</p> <p>0.3.3.1.1</p> <p>0.3.5.2.6.1.4</p>			
I	8/09/4	REVISED BLOCKS 3, 4, 5 & 17	<i>G.K. Ruby</i>
H	6/13/73	REVISE MSFC REQUIREMENTS	G.E. LECKIE
G	4/19/72	REVISED BLOCKS 3, 4, 5, 16 & 17	G.E. LECKIE
F	3/16/71	REVISE MSFC REQUIREMENTS	G.E. LECKIE
E	4/4/71	CHANGE PREFIX FROM "IV" TO "V"	G.E. LECKIE
D	6/3/70	REVISE MSFC REQUIREMENT REF RSOC 53	D.E. SCHMIDT
C	1/7/70	REVISE EFFECTIVITY & BLOCK 5	J.C. PEURRUNG
B	11/24/69	CHANGE BLOCK 4	J.C. PEURRUNG
A	1/19/68	UPDATE BLOCKS 4 AND 17	S/J. HANSEN
6. REV. DATE		REASON	
S/W.B. HUNT		IBM - 906	
7. NASA APPROVAL		8. ORGANIZATION	
S/P.W. SCHMID		JD-25	
9. DATE		10. APPROVAL DATE	
29 SEPTEMBER 1967		6 OCTOBER 1967	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2	
1. TEST TITLE		2. KSC TEST NUMBER	
IU HEAVY COMPONENT INSTALLATION AND REMOVAL		V-34047	
3. EFFECTIVITY		AS-206 & SUBS	
12. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME	
LC 39A, B, C	N/A	4 MEN - 16 HOURS	
16. SUPPORT REQUIREMENTS			
INTERSTAGE REQUIREMENTS:		N/A	
OFF-COMPLEX SUPPORT:		N/A	
ON-COMPLEX SUPPORT:		<p>Q/A</p> <p>IBM MECHANICAL</p> <p>IBM IU VEHICLE NETWORKS</p> <p>IBM QUAL. ASSURANCE</p>	
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
MSFC-MAN-008		V-31108	
MSFC-SPEC-164		7921601	
MSFC-SPEC-195			
18. ITEM CONTINUATION			



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
ACTUATOR HOLDING FIXTURE - INSTALLATION & REMOVAL	V-34048	
	3. EFFECTIVITY	
	As Required	
4. TEST OBJECTIVES		
Specifies the instructions for installing and removing the actuator holding fixture. The holding fixture provides the means for supporting the actuators, holds the engine at center and allows the actuator to be cycled full stroke and not move engine.		
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION		
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.		
Test Description Holding Fixture Installation:		
<ol style="list-style-type: none"> <li>1. Removes engine struts from area of pitch actuator.</li> <li>2. Disconnects pitch &amp; yaw actuators from attach points.</li> <li>3. Installs holding fixture</li> <li>4. Attach actuators to holding fixtures</li> </ol>		
Holding Fixture Removal:		
<ol style="list-style-type: none"> <li>1. Detaches actuator from the holding fixture</li> <li>2. Removes holding fixture</li> <li>3. Installs actuator to the flight configuration</li> <li>4. Reinstalls engine struts to the flight configuration</li> </ol>		
Equipment Status		
<ol style="list-style-type: none"> <li>1. Aft Interstage Access installed</li> <li>DSV-4B-474 Fixture, Engine Actuator Support Kit</li> </ol>		
Test Configuration		
<ol style="list-style-type: none"> <li>1. The stage shall be vertical.</li> </ol>		
STANDBY TEST REQUIREMENTS		
MSFC: None		
B	5/8/71	Revised KSC Test No. V-30348, was O-IV-34048
A	3/25/69	Change Effectivity to "As Req'd". Holding Fixture Instl. no longer req'd during normal test sequence
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
M. J. Ploner/s	DAC/FTC	10/2/67
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
W. G. Mahoney/s	LV-MEC-24	10/20/67

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER	
ACTUATOR HOLDING FIXTURE, INSTALLATION & REMOVAL	V-34048	
	3. EFFECTIVITY	
	As Required	
13. LOCATION	14. COMPUTER PROC. IDENTIFICATION	15. EST. TEST TIME
LC 34/37. VAR	N/A	8 Hrs
16. SUPPORT REQUIREMENTS		
Rocketdyne personnel		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
161632 Actuator Holding Fixture, Instl. & Removal		
18. ITEM CONTINUATION		



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>	
1. TEST TITLE PREPARATION FOR USE OF GEARCASE PRESSURE, CONTROL SYSTEM PRESSURE, AND HYDRAULIC PRECHARGE PRESSURE MONITOR GAGES		2. KSC TEST NUMBER V-34052	
		3. EFFECTIVITY 206 AND SUBS	
4. TEST OBJECTIVES			
1) CHECKOUT CONTROL SPHERE HIGH PRESSURE MONITOR GAGE. (0-3000 PSIG) 2) CHECKOUT 750 PSIG CONTROL PRESSURE MONITOR GAGE. 3) CHECKOUT GEARCASE PRESSURE MONITOR GAGES (0-15 PSIG, 8 EACH) 4) CHECKOUT HYDRAULIC PRECHARGE MONITOR GAGE. (0-3000 PSIG)			
5. TEST DESCRIPTION/EQUIPMENT STATUS/CONFIGURATION			
THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THE PNEUMATIC TEST PANELS AND MONITOR GAGES ARE SET UP IN A SAFE, CONVENIENT LOCATION ON THE LAUNCH PEDESTAL.  1) A 0-3000 PSIG PNEUMATIC TEST PANEL (LOX SERVICE) IS CONNECTED TO THE 0-3000 PSIG GAGE IN THE CONTROL SYSTEM PRESSURE MONITOR PANEL. TEST PANEL AND MONITOR GAGE INCREASING AND DECREASING PRESSURE IS RECORDED IN 500 PSI INCREMENTS (0-3000 PSIG) THE CONTROL SPHERE MONITOR GAGE MUST READ WITHIN 25 PSIG OF THE CALIBRATED GAGE. THE TEST SETUP IS SECURED AS REQUIRED, AND ALL LINES AND FITTINGS SEALED TO MAINTAIN CLEANLINESS. THE MONITOR GAGE IS THEN READY FOR USE.  2) A 0-1000 PSIG PNEUMATIC TEST PANEL (LOX SERVICE) IS CONNECTED TO THE 0-800 PSIG GAGE IN THE CONTROL SYSTEM MONITOR PANEL. TEST PANEL AND MONITOR GAGE INCREASING AND DECREASING PRESSURES ARE RECORDED IN 100 PSI INCREMENTS. (0-800 PSIG) THE 750 PSIG CONTROL PRESSURE MONITOR GAGE MUST READ WITHIN 10 PSIG OF THE CALIBRATED GAGE. THE TEST SETUP IS DISMANTLED AS REQUIRED, AND ALL LINES AND FITTINGS SEALED TO MAINTAIN CLEANLINESS. THE MONITOR GAGE IS THEN READY FOR USE.  3) A 0-25 PSIG PNEUMATIC TEST PANEL (FUEL SERVICE) IS CONNECTED TO THE 0-15 PSIG GEARCASE PRESSURE MONITOR GAGES. TEST PANEL AND MONITOR GAGE INCREASING AND DECREASING PRESSURE IS RECORDED IN 2 PSI INCREMENTS (0-15 PSIG). MONITOR GAGES ARE REDLINES AT 2 AND 10 PSIG. THE TEST SETUP IS DISMANTLED AS REQUIRED. ALL LINES AND FITTINGS ARE SEALED TO MAINTAIN CLEANLINESS. THE MONITOR GAGE IS THEN READY FOR USE.			
B.	7/21/72	CLASSIFIED HAZARDOUS BY SYSTEMS SAFETY	
A.	2/28/72	NON-HAZARDOUS PER KMI.1710.13A/SF	
6. REV.	DATE	REASON	
7. CONTRACTOR APPROVAL	8. ORGANIZATION		9. DATE
<i>[Signature]</i>	CCSD		9/22/71
10. NASA KSC APPROVAL	11. ORGANIZATION		12. APPROVAL DATE
<i>[Signature]</i>	LV MEC 23		10/28/71

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>	
1. TEST TITLE PREPARATION FOR USE OF GEARCASE PRESSURE, CONTROL SYSTEM PRESSURE, AND HYDRAULIC PRECHARGE PRESSURE MONITOR GAGES		2. KSC TEST NUMBER V-34052	
		3. EFFECTIVITY 206 AND SUBS	
13. LOCATION VAB	14. COMPUTER PROC. IDENTIFICATION N/A		
16. SUPPORT REQUIREMENTS		15. EST. TEST TIME 4 HOURS	
H. P. GAS			
17. OTHER APPLICABLE REFERENCE DOCUMENTATION			
NONE			
18. ITEM CONTINUATION			
ITEM #5 VEHICLE CONFIGURATION - N/A			
TEST REQUIREMENTS MSFC: N/A			
PHASE N/A			
ITEM #5			
4) A 0-3000 PSIG PNEUMATIC TEST PANEL (FUEL SERVICE) IS CONNECTED TO THE HYDRAULIC PRECHARGE MONITOR GAGE. TEST PANEL AND MONITOR GAGE INCREASING AND DECREASING PRESSURES ARE RECORDED IN 500 PSI INCREMENTS. THE HYDRAULIC PRECHARGE MONITOR GAGE IS MARKED FOR EASY IDENTIFICATION. THE TEST SETUP IS DISMANTLED AS REQUIRED AND ALL LINES AND FITTINGS SEALED TO MAINTAIN CLEANLINESS. THE MONITOR GAGE IS THEN READY FOR USE.			

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
TEST TITLE MODEL VI GROUND HYDRAULIC SERVICER FUNCTIONAL CHECKOUT AND PREPARATION TEST. (STAND BY)		3. PRE TEST NUMBER V-34053
4. TEST OBJECTIVES		5. EFFECTIVITY AS REQUIRED
<p>1) FUNCTIONAL CHECKOUT OF THE GROUND HYDRAULIC SERVICER.</p> <p>2) ENSURE CLEANLINESS OF HYDRAULIC FLUID IN THE GROUND HYDRAULIC SERVICER.</p> <p>3) CHECK GROUND HYDRAULIC SERVICER FOR LEAKS.</p>		
6. SUPPORT EQUIPMENT STATUS CONFIGURATION		
<p>THIS TEST DOES NOT CONTAIN HAZARDOUS OPERATIONS.</p> <p>THE GROUND HYDRAULIC SERVICER, SUPPLY, AND RETURN FLEX HOSES ARE CHECKED FOR LEAKAGE AND FUNCTIONAL OPERATION OF COMPONENTS, CONNECTIONS AND LINES. HYDRAULIC FLUID IS CIRCULATED THROUGH ALL THE HYDRAULIC SERVICER UNIT SYSTEM VALVES AND FILTERS TO PURGE AND CLEAN THE SYSTEM. AT COMPLETION OF THE PURGE, FLUID SAMPLES ARE OBTAINED AND ANALYZED TO ENSURE THE FLUID IS ACCEPTABLE FOR USE IN FLIGHT HYDRAULIC SYSTEMS.</p>		
TEST REQUIREMENTS MSFC: N/A		
PHASE N/A		
B 6/7/74 TO PERCEIVE DOCUMENTATION REQUIREMENTS		
A 3/23/72 NON-HAZARDOUS PER KMI. 1710-13A/SF		
7. REV. DATE	REASON	Contractor Approval
8. ORGANIZATION	9. DATE	KSC Approval
CCSD	9/22/71	
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
R Newall	LV MEC 23	10/28/71

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE MODEL VI GROUND HYDRAULIC SERVICER FUNCTIONAL CHECKOUT AND PREPARATION TEST. (STANDBY)		2. PRE TEST NUMBER V-34053
3. LOCATION VAB or PAD		4. COMPUTER PROC IDENTIFICATION N/A
5. SUPPORT REQUIREMENTS		6. EST TEST TIME 5 HOURS
<p>1) H. P. GAS</p> <p>2) ELECTRICAL POWER (440 V, 60 CYCLE, 3 PHASE)</p> <p>3) INDUSTRIAL WATER</p>		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION MSFC SPECIFICATIONS 166D, 20C85076		
18. ITEM CONTINUATION		



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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER V-36038	
1. PNEUMATIC CONSOLE SET UP	3. EFFECTIVITY AS-209 & SUBS	
4. TEST OBJECTIVES		
- PRESSURIZE THE PNEUMATIC CONSOLE FOR MANUAL OPERATIONS, ST-124 GN <sub>2</sub> PURGE, - PRESSURE REGULATOR SET UP (POWER ON), SETUP FOR REMOTE OPERATION, AND - SECURE THE PNEUMATIC CONSOLE AFTER MANUAL OR REMOTE OPERATIONS.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION		
THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THE PNEUMATIC CONSOLE IS PRESSURIZED MANUALLY TO PROVIDE PNEUMATIC CONSOLE SUPPORT.  SECURING IS ACCOMPLISHED BY VENTING GN <sub>2</sub> FROM CONSOLE.  CONFIGURATION: INSTALLED ON LUT WITH HP GN <sub>2</sub> APPLIED.		
PHASE: II, III, IV, V, VI		TEST REQUIREMENTS
		MSFC: N/A
6. REV.	DATE	REASON
1	7/22/74	REVISED BLOCKS 3 & 17
2	7/7/72	REVISED BLOCKS 3, 5, 13 AND 16
3	7-5-71	CHANGE PREFIX FROM "IV" TO "VI" & BLOCK 15
4	7/1/72	CHANGE TO TEST OBJECTIVES, BLOCK 4
5	7/7/72	CHANGE FROM HAZARDOUS TO NON-HAZARDOUS
6	7/7/72	MODIFY BLOCK 5
7	11/24/76	TO CHANGE BLOCKS 4 AND 5
7. CONTRACTOR APPROVAL		8. ORGANIZATION
S/J. H. HANSEN		IBM - M71
9. DATE		10. APPROVAL DATE
OCTOBER 4, 1967		OCTOBER 9, 1967
11. NASA-FC APPROVAL		12. APPROVAL DATE
S/ PAUL SCHMID		OCTOBER 9, 1967

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE	2. KSC TEST NUMBER V-36038	
1. PNEUMATIC CONSOLE SET UP	3. EFFECTIVITY AS-209 & SUBS	
13. LOCATION	14. COMPUTER PROGRAM IDENTIFICATION	15. EST. TEST TIME
LC 39	N/A	1 MAN - 1.5 HR TOTAL
16. SUPPORT REQUIREMENTS		
INTERSTAGE: N/A OFF COMPLEX: N/A ON COMPLEX: IBM QA RD 4290 RD 40092 RD 40093 IBM MECHANICAL		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
MSFC-MAN-014		
18. ITEM CONTINUATION		

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REV 32

KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE IU UMBILICAL HOUSING INSTALLATION AND REMOVAL		2. KSC TEST NUMBER V-36846 3. EFFECTIVITY AS-206 & SUBS
4. TEST OBJECTIVES  PREPARE THE IU UMBILICAL HOUSING FOR INSTALLATION AND INSTALL ON THE VEHICLE. REMOVAL OF HOUSING FROM UMBILICAL CARRIER.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS OPERATION IS DIVIDED INTO TWO PARTS.  1. THE IU UMBILICAL HOUSING IS PREPARED FOR INSTALLATION AND INSTALLED ON THE VEHICLE.  2. THE IU UMBILICAL HOUSING IS PREPARED FOR REINSTALLATION OR REMOVED FROM THE UMBILICAL CARRIER SUPPORTS.   CONFIGURATION: VEHICLE STACKED.   PHASE: II, III  TEST REQUIREMENTS: MSFC: N/A		
6. REV.	DATE	REASON
C	8/27/77	REVISED BLOCKS 3, 4, 5 AND 17
B	4/7/72	REVISED BLOCKS 3, 4, 5, AND 16
A	2-12-69	REVISED BLOCKS 1, 4, AND 5
7. CONTRACTOR APPROVAL S/ W.B. HUNT		8. ORGANIZATION IBM K73
9. DATE 29 SEPTEMBER 1967		10. NASA PER APPROVAL S/ PAUL SCHMID
11. APPROVAL DATE 10-6-67		12. APPROVAL DATE

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE IU UMBILICAL HOUSING INSTALLATION AND REMOVAL		2. KSC TEST NUMBER V-36846 3. EFFECTIVITY AS-206 & SUBS
13. LOCATION VAB	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 2 MEN - 8 HOURS
16. SUPPORT REQUIREMENTS  INTERSTAGE: S-IVB MECHANICAL, BOEING S/A  OFF-COMPLEX: N/A  ON-COMPLEX: IBM QA IU VEHICLE NETWORKS IBM MECHANICAL		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION ABMA-STD-18 75M 21452 MC-245 MSFC-MAN-010 75M 24737		
18. ITEM CONTINUATION		



KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE UPPER PROTECTIVE RING, GUIDE PIN BRACKET, AND IU PROTECTIVE COVER INSTALLATION AND REMOVAL.		2. KSC TEST NUMBER V-36048
		3. EFFECTIVITY SL-206 & SUBS AND AS-512 & SUBS
4. TEST OBJECTIVES  TO INSTALL AND REMOVE THE IU UPPER PROTECTION RING, GUIDE PIN BRACKETS, AND THE PROTECTIVE COVER.		
5. TEST DESCRIPTION/EQUIPMENT STATUS CONFIGURATION  THIS TEST <input checked="" type="checkbox"/> DOES <input type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  THIS PROCEDURE CONSISTS OF THREE PARTS.  PART I: UPPER PROTECTIVE RING INSTALLATION OR REMOVAL. 1. INSTALLATION: THE TRANSPORTER AND UPPER PROTECTIVE RING ARE TRANSPORTED TO THE HOISTING AREA. THE HOISTING TOOL IS ATTACHED TO THE UPPER PROTECTIVE RING AND HOISTED TO THE IU. THE UPPER PROTECTIVE RING IS MATED TO THE IU.  2. REMOVAL: THE TRANSPORTER IS MOVED TO THE HOISTING AREA. THE HOISTING TOOL IS ATTACHED TO THE UPPER PROTECTIVE RING. THE UPPER PROTECTIVE RING IS DEMATED FROM THE IU AND SECURED TO THE TRANSPORTER.  PART II: GUIDE PIN BRACKETS INSTALLATION OR REMOVAL.  PART III: IU PROTECTIVE COVER INSTALLATION OR REMOVAL. 1. INSTALLATION: THE PROTECTIVE COVER IS LIFTED FROM THE 15TH FLOOR STORAGE PLATFORM, POSITIONED AND ATTACHED TO THE IU.  2. REMOVAL: THE PROTECTIVE COVER IS REMOVED FROM THE IU AND PLACED ON THE 15TH FLOOR STORAGE PLATFORM.  CONFIGURATION: IU ERECTED ON S-IVB.  PHASE: II		
TEST REQUIREMENTS MSFC: N/A		
SEE REV. LEVEL HISTORY IN BLOCK 18 CONTIN.		
6. REV. DATE REASON 12-16-8 COMPLETE REVISION TO COMBINE TESTS		
7. CONTRACTOR APPROVAL S/ W.B. HUNT		
8. ORGANIZATION IBM K73		
9. DATE 28 SEPTEMBER 1967		
10. NASA-KSC APPROVAL S/ PAUL W. SCHMID		
11. ORGANIZATION JD-25		
12. APPROVAL DATE 10-2-67		

KSC FORM 23-338 (7-67)

APOLLO/SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE UPPER PROTECTIVE RING, GUIDE PIN BRACKETS, AND IU PROTECTIVE COVER INSTALLATION AND REMOVAL.		2. KSC TEST NUMBER V-36048
		3. EFFECTIVITY SL-206 & SUBS AND AS-206 & SUBS
13. LOCATION LC 39	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 4 MEN - 16 HOURS
16. SUPPORT REQUIREMENTS  INTERSTAGE: S-IVB MECHANICAL  OFF-COMPLEX: SUPPORT CONTRACTOR SHOPS  ON-COMPLEX: IBM QA KSC SAFETY SECURITY SWING ARMS PLATFORMS 750/75 TON CRANE IBM MECHANICAL		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION HT-322-13000 TM-SE700068 K-V-053 MGSE-D-604		
18. ITEM CONTINUATION  BLOCK 6-REVISION HISTORY (CONTINUED FROM PAGE 1)		
REV.	DATE	REASON
C	4/7/72	REVISED BLKS 3, 5, AND 16
CONTR. APPRVL. KSC APPRVL. <i>[Signature]</i> <i>[Signature]</i>		

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505A  
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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE <u>1</u> OF <u>2</u>
1. TEST TITLE TAIL SERVICE MAST SUPPORT OPERATIONS FOR LSE VAB AND PAD ELECTRO-MECHANICAL SYSTEMS TESTS	2. KSC TEST NUMBER V-36111	3. EFFECTIVITY CSE
4. TEST OBJECTIVES  To define operations required as preparations for and securing from LSE VAB AND PAD-- ELECTRO-MECHANICAL SYSTEMS TESTS.		
5. TEST DESCRIPTION EQUIPMENT STATUS CONFIGURATION  THIS TEST <input type="checkbox"/> DOES <input checked="" type="checkbox"/> DOES NOT CONTAIN HAZARDOUS OPERATIONS.  Classification: Subtask  Prime Test Organization: Service Arm Systems  This test verifies the firing circuits to HRV #1 and HRV #2 are satisfactory to support launch. Normal operating pressure will be used to operate these valves.  <div style="text-align: center;"><del>RESTRICTED</del></div>		
6. REV. DATE REASON <div style="display: flex; justify-content: space-between;"> <div> W. E. Estes/W. F. Dwyer  G. H. Robinson </div> <div> BAC 5-8521/5-8552  LV-NEC-12 </div> <div> 8/27/68  DATE </div> </div>		

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APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE <u>2</u> OF <u>2</u>
1. TEST TITLE TAIL SERVICE MAST SUPPORT OPERATIONS FOR LSE VAB AND PAD ELECTRO-MECHANICAL SYSTEMS TESTS	2. KSC TEST NUMBER V-36111	3. EFFECTIVITY CSE
4. LOCATION VAB & PAD	5. COMPUTER PROGRAM IDENTIFICATION N/A	6. EST. TEST TIME 8 HRS.
7. OTHER APPLICABLE REFERENCE DOCUMENTATION V-20052 V-20055		
8. ITEM CONTINUATION		

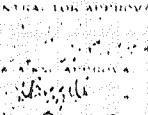
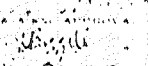
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KSC OPERATIONS APOLLO/SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2
1. TEST TITLE TCE STAGE MODULE PRETEST PREPARATIONS		2. KSC TEST NUMBER V-38010 3. EFFECTIVITY 206 & Subs LC-39
4. TEST OBJECTIVES TO VERIFY THE OPERATIONAL STATUS OF THE TCE STAGE MODULE AND ESTABLISH A BASELINE CONFIGURATION OF PATCHING AND ADJUSTMENT IN PREPARATION FOR TEST SUPPORT.		
5. TEST DESCRIPTION OR EQUIPMENT STATUS CONFIGURATION THIS TEST DOES NOT CONTAIN HAZARDOUS OPERATIONS.  The RF signal generator is functionally checked and the deviation meter accuracy is verified at two points by the carrier null method. The FM test oscillator is checked for carrier deviation levels using the deviation meter. Discriminator input levels are measured by a DVM and are recorded for references utilizing the Test Oscillator and RF signal generator as inputs to the GF Receiver. During VAB OPS the 450 KHZ Demod output is set to establish discriminator input level reference. The receivers are checked for correct control settings and functional operation. The Oscilloscope and frequency counter are verified functionally.  The 600 KHZ Demod is functionally tested using the PCM simulator as a 600 KHZ source. Correct display of a digital word through the S-IB Decod is verified utilizing the 16 channel D/A converter. The two 8-channel brush recorders are functionally verified by utilizing station calibration levels.  Patching is configured for test support.  Vehicle configuration is not applicable.  Test Requirements MSFC - N/A KSC - N/A		
A 8-26-74 To conform with TCE Relocation to CIF		
6. REV.	DATE	REASON
7. CONTRACTOR APPROVAL	8. ORGANIZATION	9. DATE
J.R. Howard	CCSD	12-7-71
10. NASA-KSC APPROVAL	11. ORGANIZATION	12. APPROVAL DATE
L.C. Blanchard	LV-INS-12	12-10-71

KSC FORM 25-338 (7/71)

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF 2
1. TEST TITLE TCE STAGE MODULE PRETEST PREPARATIONS		2. KSC TEST NUMBER V-38010 3. EFFECTIVITY 206 & Subs LC-39
12. LOCATION (291 & 2P12)	14. COMPUTER PROC. IDENTIFICATION N/A	15. EST. TEST TIME 4 hours
16. SUPPORT REQUIREMENTS  CIF/TCE (291 & 2P12)		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION Operations and maintenance telemetry checkout equipment Vendors Manuals for Installed Test Equipment CIF/TCE (291 - 2P12) System Drawings		
18. ITEM CONTINUATION		

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KSC OPERATIONS APOLLO SATURN TEST AND OPERATIONS CATALOG SHEET		PAGE 1 OF 2	
1 TEST TITLE <b>RF AND TELEMETRY PLUGS OUT OAT PREPARATIONS AND SECURING</b>		2 KSC TEST NUMBER <b>V-38011</b>	
3 EFFECTIVITY <b>206 &amp; Subs LC-39</b>			
4 TEST OBJECTIVES <b>TO PROVIDE A PATH FOR UNINTERRUPTED SIGNAL FLOW TO AND FROM THE RF AND TELEMETRY EQUIPMENT DURING PLUGS OUT OAT. THIS IS PROVIDED BY INSTALLATION AND SUBSEQUENT REMOVAL OF THE RF AND TELEMETRY OAT CABLE.</b>			
5 TEST DESCRIPTION, EQUIPMENT STATUS, & IDENTIFICATION  <b>THIS TEST DOES NOT CONTAIN HAZARDOUS OPERATIONS.</b>  The RF and Telemetry OAT Cable is installed between the VAB Level C bulkhead connector and RF/TM systems located in Unit 13 of the SIB Stage. Connections are made to the DRSC power divider, DRSC Decoders 1 and 2, Telemetry PCM/DDAS Assembly and the Telemetry RF Coupler. This provides RF command input to the DRSC system, Audio outputs from both decoders, 600 KHZ DDAS output for the PCM/DDAS and RF output from the telemetry systems. After SIB Stage power application, reception of the 600 KHZ DDAS signal is verified at the TCE.  After completion of the swing arm test, the RF/TM OAT cable is removed and the Airborne systems configuration is restored.  The vehicle must be in VAB High Bay 1.  <div style="text-align: center;"><b>TEST REQUIREMENTS</b> MSFC - N/A KSC - N/A</div>			
6 REV. DATE		REASON	
7 CONTRACTOR APPROVAL 		8 ORGANIZATION <b>CCSD</b>	
9 DATE <b>12-10-71</b>		10 APPROVAL DATE <b>12-10-71</b>	
11 CONTRACTOR APPROVAL 		12 ORGANIZATION <b>LV-INS-12</b>	

APOLLO SATURN TEST AND OPERATIONS CATALOG (SHEET 2)		PAGE 2 OF	
1 TEST TITLE <b>RF AND TELEMETRY PLUGS OUT OAT PREPARATIONS AND SECURING</b>		2 KSC TEST NUMBER <b>V-38011</b>	
3 EFFECTIVITY <b>206 &amp; Subs LC-39</b>			
4 LOCATION <b>LC-39</b>	14 COMPUTER PROC. IDENTIFICATION <b>N/A</b>	15 EST. TEST TIME <b>2 Hours</b>	
6 TEST REQUIREMENTS  <b>1. Access to Unit 13 2. Access to M. L. Distributor 9020</b>			
7 OTHER APPLICABLE REFERENCE DOCUMENTATION <b>Skylab II, III, IV RF &amp; TM Cables, Drawings No. LV-INS-12-2 TM System Functional Drawing 77K09178</b>			
8 TEST CONTINUATION			



DATE: OCTOBER 4, 1974  
REVISION 32

LAUNCH OPERATIONS

PAGE DISTRIBUTION  
TEST NO. GP-592  
VEHICLE SAT V/IB

# KENNEDY SPACE CENTER

BUCHANAN, D.D.	DD	1
PARSONS, W.	DD-SED	1
COONCE, J.M.	IN-OMO	5
FIKE, J.W.	IN-QAL	1
LIBRARY	IS-DOC-1L	2
ARBIC, R.G.	LA-PLN-2	1
KECK, J.E.	LO-RRO-1	1
MEDLOCK, J.R.	LV-CAP	1
LEALMAN, R.E.	LV-GDC	1
CHAMBERS, M	LV-GDC-1	1
CHANDLER, W.O.	LV-GDC-2	1
WHITESIDE, C.A.	LV-GDC-3	1
HUFFMAN, B.	LV-INS-1	1
FITZGERALD, J.J.	LV-INS-2	1
O'HARA, A.	LV-OMO	1
MARIANI, T.	LV-OMO-1	6
HORNE, C.V.	LV-QAL	1
BISHOP, E.	TS-NTS-1	1
THARPE, R.C.	TS-OSM	1

GELZER, J.R.	CHRY-16/VAB 15B10	15
HAYES, W.W.	IBM-922/VAB 2N1-1	12
NICHOLS, H.	MDAC/VAB 3L4	5
ANDERSON, B.C.	ROC-2/VAB 3N9	2
BOYETTE, M.	BOFM-49/VAB 3N1	15
WEINBERG, D.B.	BOFM-35/VAB 2L3	

5 PLUS ORIGINALS  
& EXTRAS

# MARSHALL SPACE FLIGHT CENTER

SAT-A	KEYES	1
SAT-C	RAINS	1
SAT-E	BARNES	1
SAT-SE	FERRELL	1
SAT-IU/GSE	GALEY	1
SAT-SII/IVB	LAHATTE	1
S&E AERO-P	TEAGUE	1
S&E ASTN-SO	SELLS	6
S&E ASTR-SS	JOHNSON	1
S&E ASTR-ST	GLASS	3
S&E QUAL-PC	COVINGTON	3
S&E S/P-EH	VEDANE	1

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